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ABSTRACT

The increasing number of medical centers involved in collaborative and innovative health services in the community is but one reflection of social concerns and pressures for change in the health care system. Medical schools and their affiliated teaching hospitals are trying in various ways to adapt their teaching, research, and service functions to these concerns. With the intent of exploring how a number of medical centers are approaching these problems, the Harvard Center for Community Health and Medical Care in the spring of 1970 sponsored an Invitational Conference on the Evaluation of University Medical Care Programs. The conference brought together representatives of 6 medical schools with comprehensive medical care plans, as well as people with special backgrounds in medical care, economics, prepaid health care plans, and program evaluation. The specific thrust of the conference centered around how each of the participating medical schools are proposing to evaluate their particular medical care plan. This document presents the papers and discussions that took place at the conference. (Author/HS)

NATIONAL CENTER FOR HEALTH SERVICES
RESEARCH AND DEVELOPMENT PHS

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# CONFERENCE SERIES

# UNIVERSITY MEDICAL CARE PROGRAMS

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MENTAL HEALTH ADMINISTRATION

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DECEMBER 1971

# UNIVERSITY MEDICAL CARE PROGRAMS: EVALUATION

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
NATIONAL CENTER FOR HEALTH SERVICES
RESEARCH AND DEVELOPMENT

# FOREWORD

The increasing number of medical centers involved in collaborative and innovative health services in the community is but one reflection of social concerns and pressures for change in the health care system. Medical schools and their affiliated teaching hospitals are trying in various ways to adapt their teaching, research and service functions to these concerns.

With the intent of exploring how a number of medical centers are approaching these problems, the Harvard Center for Community Health and Medical Care in the Spring of 1970 sponsored an Invitational Conference on the Evaluation of University Medical Care Programs.* The Conference brought together representatives of six medical schools with comprehensive medical care plans, as well as people with special backgrounds in medical care, economics, prepaid health care plans, and program evaluation.

While many conferences have been held on the general theory and art of evaluation, this conference sought a sharper focus: specifically how were each of the participating medical schools proposing to evaluate their particular medical care plan?

Throughout the conference the participants returned again and again to the need for clarification of each medical school's objectives in extending its program into the community. Most medical schools and their affiliated hospitals provide care to large numbers of indigent people through their out-patient departments—particularly the emergency service. The extension of the out-patient department into the community for the purpose of reaching larger numbers of people is a laudable, humanitarian endeavor, but if it involves no essential change in the pattern of delivery of care, it perpetuates a system which is highly unsatisfactory to recipient and provider alike. Moreover, no medical school is in a position to assume responsibility for providing medical care to the population of entire communities such as Boston, Baltimore, New Haven, St. Louis, or other large metropolitan areas. Indeed one of the dilemmas of our time is that it is not clear what agency in the community in fact does have the responsibility and authority for insuring that the entire population has equal access to high quality care. What then is a meaningful role for the medical school in the community?

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*This conference was supported by Grant HS 00632-01 from the National Center for Health Services Research and Development, HSMHA, DHEW.

The medical school can, perhaps, best serve the community by opening up new options through the development and testing of different ways of organizing and paying for the delivery of medical care. Indeed such a role is in keeping with its primary function as an educational institution.

However, the development of experiments in the delivery and financing of health services is linked with the responsibility for assessing the significance of the experiments both in contributing to the care of the individual patient and in meeting the needs of the community. The first requires, beyond traditional clinical research, new understanding of how the process of care itself may affect the individual patient's prognosis–such as the influence of different manpower mixes on the incidence of complications or other outcomes. The second requires careful definition of the population to be served and a thorough assessment of the extent to which this population's needs are met. Systematic analysis of this second area requires information about those segments of the population which are not served as well as those which are. This means that the unit of evaluative study must be the community as well as the patient. If this is not so, the opportunity for the medical school to delineate the options available to the community in its efforts to meet its needs will be lost.

In its educational role the medical school also views its plan for providing health services in the community as a setting for the education of medical students and house staff in the problems and challenges of delivering health care outside the hospital setting. Most medical care, after all, is provided on an ambulatory basis. For the educational process to have meaning beyond the exigencies of the moment, both the rationale which underlies the care of the individual patient and that which dictates the structure of the delivery of services must be under constant review. Again we are led to the need for systematic study of the health care process both from the individual and community standpoint. It is perhaps here that medical schools can make a unique contribution since they have the potential for linking the educational and service functions in an integral fashion through effective evaluation.

The medical schools participating in the conference reported here are acutely aware of these issues. It is in the belief that their struggles to grapple with such issues will be of value to others facing similar problems that these Proceedings are presented.

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## PRELIMINARY SESSION

In the early phase of planning the Conference, medical center representatives requested a preliminary session to review and discuss pressing issues in organizing, administering, and financing the plans. The plea for this additional time was generated from background materials prepared by each center and distributed prior to the Conference. This background information served as the focus of discussion during the preliminary session at which time fundamentals of the plans were described and attention was directed to the multiple, and often diverse, objectives among the plans. Substantial differences in the organizational structures and financing arrangements* were noted, and some of the expected changes in delivery of medical care and in the focus of medical education were underlined.

### Impetus for Developing the Plans

In spite of the diverse objectives mentioned above, there was a common theme that seemed to motivate the formation of these university medical care plans. This theme was a recognition of the need for adaptations in the health care system, and the desire of the universities to be in the vanguard of efforts to introduce and test new methods of providing medical care and to adapt medical education to these innovations.

The medical schools and their affiliated hospitals, aware of the widening gap between expectations and demands of the populations served and the ability of the health care systems to deliver the services needed, hope through the development of imaginative programs to demonstrate the changes required to provide a more effective delivery system and to suggest appropriate funding arrangements. In the belief that a monolithic health structure is inappropriate for the United States, many kinds of organizational forms and financial arrangements need to be developed. Under these circumstances small-scale experiments with different organizational methods and different financing arrangements will be particularly important. The university medical center provides an appropriate setting for testing and evaluating the relative effectiveness of these experiments.

### Objectives of the Plans

Most plans stated several concurrent objectives, including three or more of the following: rendering good primary care to patients while making specialist care available as needed; improving the health of the target population; providing a setting for teaching and training programs; experimenting with alternative manpower configurations for delivery of health services; determining the effect of alternative methods of financing on medical care processes and on patients; developing a model of health delivery and/or financing; and providing a laboratory for health services research.

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*Background Information–Appendix

Such multiple and broadly stated objectives present difficulties both in the development of specific medical care plans and in the assessment of the extent to which objectives are accomplished. The possibility of developing common measures of success in achieving objectives within a given center and between centers requires that objectives be stated as explicitly as possible and some degree of commonality of objectives be present among the centers.

Discussion revealed that the diversities in purpose among some of the plans were due to exigencies such as state laws, university policy, government agency guidelines or other requirements of their prospective funding and enrollment sources, and the complex interplay of demands by both professional and consumer organizations. The stated objectives of many groups were conditioned to some extent by one of more of these demands. However, some of these exigencies provided an impetus for change, and the medical centers began negotiations among sponsors, providers, and consumer groups which gave rise to the plans presented at the Conference.

According different priorities to objectives influenced, to a great degree, each plan's specific operational goals, and the selection of appropriate measures for evaluating its success. The discussions made clear that comparisons of the service or cost experience of various plans could be made only after careful review of similarities and differences in major objectives. Ideally it would be desirable to evaluate the service, research and teaching functions separately. The methodological problems in this approach are enormous, but some of the plans are attempting to address this issue.

## Organizational Structure and Financing of the Plans

The legal authority of each of the plans is vested in one of the following corporate structures: directly under university, medical school and/or teaching hospital auspices; a separate corporation spun off from the medical school and teaching hospitals, with formal associations maintained; an independent community corporation, contracting with a medical school for purchase of service and for participation in education, training, research and evaluation.

Similarly, the *de facto* policy-making bodies varied in type, ranging from a committee composed of chairmen of the clinical departments of a medical school to boards composed of various mixes of medical school-hospital representatives, consumers, representatives of the general public, and insurance company sponsors.

In some plans, where boards have a majority of lay members, the selection and supervision of health professionals have been delegated to a special committee or group at the medical school, with veto power on individual appointments retained by the lay board. In others, where the plan is a chartered community corporation having formal affiliations with a university-medical center (e.g. the Community Plan in New Haven), the selection and appointment of health professionals are made initially by the corporation with consultation from the medical center to insure professionally qualified persons.

Plans are financed through various combinations of federal funds (Title XVIII and XIX, OEO, grants, and others), group health insurance organizations (i.e. Blue Cross-Blue Shield and commercial insurance carriers), private companies, state and local agencies, and other schemes. Each organization, whether public or private, has its own set of regulations governing eligibility, enrollment, and payment for service. All of these factors directly influence the definition of the population exposed to risk, the services offered, and may affect administrative costs of the plans.

## Implications of Funding

The characteristics of the population entering the plan determine the demands for service, influence staffing patterns, and order the kinds of services acceptable to these consumers. Thus it is important to note that the population to be served is determined to a great extent by the financing arrangements adopted. These funding arrangements also affect the nature of the record keeping system and therefore the nature of the evaluation. For example, if a plan obtains members through the Blue Cross group enrollment mechanism, an employment base is usual; if on the other hand OEO provides payment, eligibility is based on income guidelines; and if categorical grants are awarded, a specific type of health program is required. Where a plan receives capitation payments from multiple sources, it must contend with possibilities for confusion not only in the mechanism through which persons enter the plan but also in the methods by which the funds are allocated. Funding for one of the plans was provided after a series of negotiations with fourteen agencies, each with different requirements and modes of reimbursement: one agency would allow funds only for service performed by a recognized provider (an established institution), while another agency would grant funds only to a community group organized to insure community participation and financial responsibility for the program. Many of the plans have faced the difficult process of trying to work within these restrictions and have set up methods for receiving multiple funding and the accounting system necessary for the varied reporting requirements.

The corporate structure of many of the universities did not permit, nor did many wish to become, underwriters of health insurance. Therefore, some of the plans have negotiated contracts to provide stipulated health service benefits with the existing insurance carriers, the Blues and commercial companies, serving as the insuring agents. In most cases this meant that the existing carrier would offer a dual choice in those geographic areas where the university plans were available. This method of obtaining subscribers for the university medical care plans has presented problems in areas where the employees of large companies are covered by national contracts for group insurance benefits. There also have been problems in obtaining dual choice options for civil servants of local, state, and federal governments under the present prepayment system.*

In the discussions the question was raised concerning the relatively small rate of growth of prepaid group practice plans in the United States. This small growth rate leads one to consider issues involved in the enrollment process. Basically, in the past, there have been only two ways to enroll in prepayment group practice plans: 1) either through membership in large unions, or 2) employment in large industries. Yet, to be acceptable, simpler and more flexible enrollment methods are essential. The medical centers have been experimenting with different ways to obtain enrollees. Indeed one of the most innovative features of the university plans may be methods developed for marketing the prepaid group practice plan through existing insurance mechanisms.

If medical care is to move in new directions and use new modes of financing, consideration must be given to innovative educational methods in the training of physicians and other health personnel who will be responsible for providing comprehensive health care in the medical center programs. In the past the prepayment group practice plans have not had a part in the medical training of providers of service but have been dependent upon physicians, trained in the atmosphere of teaching hospitals and specialty medicine, who joined the plans out of social commitment. It is hoped that physicians trained in a different environment will view the delivery of health care within the conceptual framework of a total health system.

The medical center plans, to a great extent, have faced similar difficulties. Many of their programs have evolved from medical schools and their affiliated hospitals working toward changing the *modus operandi* of health care from crisis intervention to a health care system in which the organizational dimensions become as important as the clinical. To be accomplished these changes require a major adjustment on the part of many physicians, who are essential to the medical schools and to the hospitals and whose judgment is crucial in the development of new models in the delivery of medical services. To succeed, it was agreed, the university medical care programs must provide services that are patient-oriented and geared to the needs and concerns of subscribers. The organizational framework should be structured for patient satisfaction and, in addition, offer an appropriate setting for the training of future health providers and a base for evaluating the medical care programs. One of the key issues in the achievement of these goals by the medical center programs is the availability of physicians whose medical education and training have prepared them to work in such an organizational framework. This discussion led to a critical look at medical education as it is now structured and a review of possible changes for the future.

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*Appendix

## A Look at Medical Education

Medical schools have been, and, to a large extent, should be oriented toward research and teaching. In the past there have been limited changes proposed in the curricula of medical schools, and major training has taken place within the organizational patterns of the prestigious teaching hospital with its highly specialized clinics, disease orientation, and episodic treatment. The academic reward structure and the high standards of specialization have not encouraged the systematic training of physicians or paramedical personnel which are needed to provide primary health care. Emphasis has been placed on preparing and training highly skilled people who will "push back the frontiers." In such a system minimal time and attention have been given to preparing students to meet people's actual day-by-day health needs.

In recent years medical schools have shown an increasing concern with this traditional system and with the kind of environment it provided for the teaching of medicine. There was growing awareness that the experiences gained in such a setting were not appropriate to prepare students for the rapid changes currently required in the delivery of health care. In meeting this challenge medical schools are considering new educational approaches which include the use of other institutional arrangements and cooperative ventures such as neighborhood clinics, hospital outreach centers, and other experimental programs. These ventures are being tested to determine what are the alternatives available to medical schools in their search to provide an educational setting in which students are prepared to meet the actual health needs of the community.

One suggested alternative was a scheme whereby the basic sciences relevant to medicine might be taught by the university. The medical school would be responsible for the student's clinical education and training. The clinical education and experience would be acquired in a variety of settings by having the student rotate through selected health service organizations providing care to both ambulatory and hospital patients. Such organizations as group practice centers, general and specialty hospitals, nursing homes, rehabilitation facilities, neighborhood health centers, mental health facilities, etc. would be chosen to represent a whole range of experience in patient care. These organizations would be formally affiliated with the medical schools, and the schools would be responsible for planning and supervising student programs. As in Europe, basic research would be carried out largely in special institutes. Under this model of medical education, the design of appropriate organizational relationships between the medical school and the affiliated health service facilities which would provide the clinical teaching locus would be crucial. On the one hand, the medical school has the responsibility, and, therefore, must have a real voice in determining the quality of training provided in these facilities. On the other hand, universities *per se* are not well equipped to administer the day-by-day service facilities.

Conference participants took as a premise that health is a social utility and that basic health care is a fundamental right of the population. The task then becomes one of changing the framework of medical education so that ultimately the educational structure will be responsive to the health requirements and needs of a population and to the manpower demands of an appropriately designed health delivery system.

The discussions clearly emphasized the need, at the present time, for rather radical changes in the total structure in which health services are to be provided. But the group warned against thinking of changes only in terms of the teaching or specialty hospital. This short-sighted view could delay and might prevent reordering the total structure. There was agreement that some of the primary concerns of medical education should include: the production of physicians appropriately prepared for service in the newer models of medical care; the reaction of man to his changing environment and the consequent requirements for health protection; and the provision of opportunities for experimentation with new methods in the delivery of community and personal health services.

There was concern that if the medical schools did not redirect their goals toward dealing with the whole cycle of life as the basic framework for health care, the universities will not be able to encompass a frame of reference essential for providing the kind of services that are needed by communities.

## Setting the Stage for the Conference

The preliminary session provided a useful framework for conference discussions. In addition to a review of the structure, organization and financing of the plans represented at the conference, the group presented the array of concurrent objectives being pursued—a critical factor to be dealt with in discussions of evaluation. Finally, they placed the university medical group plans in the wider context of a rapidly changing environment in both health service delivery and medical education.

# PART I:

# BACKGROUND PAPERS

## THE COLUMBIA MEDICAL PLAN OF THE JOHNS HOPKINS MEDICAL INSTITUTIONS

Robert M. Heyssel, M.D.

The Johns Hopkins-Columbia Medical Plan was developed with a series of broad objectives in mind, each of which had specific elements designed to:

- develop in a new city a medical care plan based on prepayment and group practice for all citizens of the city and surrounding area who elected to join. This meant developing a means of marketing which made it possible for all residents to join irrespective of their participation in employment based groups.
- assure all potential members a true dual choice in medical care by encouraging other non-plan health providers in the area and, where practical, developing working relationships with them. The University intends to adopt a new stance toward private practitioners in the area and actually encourage the development of other modes of practice in order that a practical atmosphere of real competition between a prepayment plan and the usual fee-for-service option available to most people will be present.
- develop a plan that would be replicable as an economic health service package in other areas of the country. To do so the plan could not be heavily subsidized by funds other than member payments although it was recognized that an investment in start-up and development costs would be necessary. It was planned that this investment would be recovered over a long term of years–thirty or more–by small add-ons to member premiums.
- enlarge the concept of the Columbia Medical Plan to include community health services and education, as well as personal health services.
- assure that the plan was developed in such a manner that the University's interest in teaching and research would not be compromised, although this interest would be developed within the limits of practicality. The possibility had to be preserved for developing arrangements for different levels of deductibles and co-payments, differing benefits and service structures, the possibility of different modules of patient care, and the possibility of designing into the programs different uses of new or old health personnel.

The realization of all of these University objectives required that the medical services be delivered in a manner which was acceptable to people, which assured quality of service for people, that was responsive to the people's needs as they perceive them and that services were delivered at a cost which is reasonable. These are not subordinate clauses to the specific objectives outlined before, but rather reflect two facts. The first is as stated, the specific objectives can't be realized without first satisfactorily meeting the expectations of members enrolled in the plan. Secondly, there are in existence plans which satisfactorily demonstrate the acceptance of many people of prepaid group practice. University involvement planned to meet the University's commitments to teaching and research, society's needs for new patterns of health services delivery, and the consumer's personal interest in the quality, availability and cost of medical care, is unique and should reconcile these various and, perhaps, conflicting objectives.

## MEMBERSHIP AND DATA COLLECTION

The new City of Columbia and vicinity appears to offer great potential in relationship to these objectives. In the first place it is a specifically designated geographic area. As a new city, it is planned to grow in a reasonably controlled manner from a very small number of people who already reside there to a population of over 100,000 in ten years, allowing the plan to develop slowly along with the community. Moreover, the new city is to be mainly middle-class, although it was envisioned that some upper middle-class persons would reside there and low cost housing is planned as part of the city.

The current population of Columbia of 6,500 is slightly above the medium national income. It is a younger population than the national average although increasing numbers of older people are moving into the city. Since all members of the Columbia Association, which means any resident of Columbia, may join the plan on a group basis, either with full membership coverage or with a supplemental coverage to their existing health insurance, the total percent of the population which selects the plan, in the final analysis, depends upon the attractiveness of the offering and the acceptability of services.

One of the obvious uncontrolled factors is that most people have existing employer provided health insurance. Since it may not be economically desirable for such an individual to change his coverage because he might lose his employer's contribution to his health insurance coverage, a supplemental plan was developed for Columbia residents which will decrease in importance as marketing of the plan by carriers improves. The population has no other choice of a prepayment health plan and, at this time, because of limited numbers of doctors and limited hospital beds available in the area, non-prepaid sources of care are inadequate. Currently, there is no individual enrollment in the plan.

Data obtained by the carrier at time of enrollment is basically name, age, sex, place of residence. On enrollment, each individual member is sent a very short questionnaire (Figure 1). Based on the replies to this questionnaire priorities for an appointment for a health review by a plan physician are set.

Enrollment data are filed by family index number and individual members are assigned a medical history number. A representative sample can be readily drawn by family or individual histories. The insurance carrier notifies the plan at the time they receive notices of enrollment and similarly when cancellations or changes in membership occur.

Finally, a master sample of the total population for Columbia and the surrounding area compared to the enrolled population is in preparation.

## MEDICAL CARE PROCESSES

The system is set up with an Encounter Form which is the basic instrument for recording what services are provided to each patient during a specific patient encounter. This form has been in use since the beginning of operation. An analysis of these data makes it possible to tell the number of physician services per any patient or family unit, which physicians saw the patients, where they were seen, whether the services were problem oriented or whether they were not, referral patterns, etc. It is possible to tell the kind of laboratory or X-ray work, type of service, place of service, type of test and procedures. The number of hospital admissions will be monitored closely including the length of patient stay and other characteristics since this is so crucial to financial operation of the plan.

Because visits to the physician are classified as either problem, that is prompted by a medical complaint of the patient, or as non-problem oriented, it can generally be assumed that non-problem oriented visits are for preventive services. The data are tabulated on a monthly basis for management purposes, and are also available for research interest. There are plans for comparisons of the data with other populations than that of Columbia City; for instance, East Baltimore. Moreover, if cooperation of doctors who are practicing in the area is forthcoming, we would hope to be able to provide a comparison between the prepayment enrolled population as opposed to the population who are seeing physicians on a fee-for-service basis. This should be possible through the master demographic study we intend to compile.

It is planned to measure behavioral aspects, attitudes, and satisfactions of members and the staff. This aspect of the plan has not been discussed to any extent to date. However, very recently the first member meeting was held and a group of ten people was formed as an ad hoc committee to develop the mechanisms for selecting and outlining the duties of a Member Advisory Committee drawn from the membership. This group of ten was randomly selected from fifty who indicated a desire to work on the problem. They will work with the administrative officers of the plan in defining the duties of the

Advisory Council. The Board of Columbia Hospital and Clinics Foundation had previously agreed to accept a consumer member on its Board if the Advisory Committee and the membership so desired.

## MEDICAL RECORDS AND PATIENT CARE RESEARCH AT COLUMBIA

The medical records system at Columbia Hospital and Clinics Foundation is problem oriented. The question of patient compliance with the therapeutic regimen has no built-in follow-up mechanism at the moment other than that relating to the physician-patient relationship. Some key information probably is not in the chart, such as patient satisfaction or dissatisfaction with services received.

The Columbia Medical Plan is an operational unit of the Office of Health Care Programs which has within it a Health Services Research and Development Center devoted to specific research in the delivery of medical care. The Health Services Research Center is charged with not only the evaluation of programs through a central core staff but for aid in development of programs. In order to be sure that research interests are protected, certain personnel in Columbia as well as other operational arms of the Office of Health Care Programs are members of the staff of the Health Services Research Center as well as the operational arm in which they have line or staff functions. This enables them to have an overview of how the program is going and also be able to monitor changes in the program so that there is a feedback mechanism to the Health Services Research and Development Center. It is the hope that this mechanism will develop specific research questions and methods of obtaining answers.

## ORGANIZATION AND MANAGEMENT OF THE COLUMBIA MEDICAL PLAN

The Office of Health Care Programs is a unit which is a joint venture of The Johns Hopkins University School of Medicine and the School of Public Health and Hygiene and The Johns Hopkins Hospital. Joint appointments are obtained for its personnel in appropriate divisions in those institutions. The Medical Plan is linked with the teaching program of the University. Students are involved in some of the programs, particularly in Pediatrics and Medicine, at the Columbia facility and subsequently it is envisioned that resident staff will also be involved. The staff of the Columbia Medical Plan have faculty and staff privileges at Johns Hopkins Hospital and as such participate in programs in East Baltimore as well as in Columbia.

Financing of the teaching program at this stage has not been settled; however, we would desire to fund separately and account for teaching, research, and services. An attempt has been made, and is being made, to obtain accurate cost for providing each service since, in a multiple carrier system in which variable benefits will occur, it is necessary to have cost by service rendered in order to maintain an equitable capitation rate amongst carriers and to provide data on cost effectiveness. The cost accounting system does provide a method for obtaining estimated or actual start-up costs. As an example, the budgeted per capita cost for the projected number of members for fiscal year 1969-70 is $165. This includes $115 per capita based on a balanced financial operation. The difference is considered to be developmental costs related primarily to initial overstaffing required to provide a wide range of services to a limited number of subscribers. To this point, there have been no monies donated. Capital for construction and equipment is totally privately financed to be amortized over a period of years.

## CONCLUSION

The foregoing description is a broad outline of the Columbia Medical Plan which is a prepaid, comprehensive medical service plan, totally privately financed. It is intended to be a focus for research and teaching as well as service. The plan is in process of development with many areas as yet incomplete in detail.

## Figure 1

## NEW ENROLLEE QUESTIONNAIRE

Please check and/or describe as appropriate:

I. Do you have a current complaint about your health?

No________

Yes_______ If so, please describe ______________________________

______________________________________________________________

______________________________________________________________

II. Do you have a *history* of a medical problem which needs current evaluation?

No ________

Yes _______ If so, please describe ______________________________

______________________________________________________________

______________________________________________________________

III. Are you currently taking any drugs prescribed by a physician for the treatment of a complaint or disease?

No ________

Yes_______ If so, please give drug name, if known, and prescription number and name of pharmacy from the prescription label. ___________

______________________________________________________________

______________________________________________________________

IV. Is there anything else which you want to discuss with a physician at this time?

No ________

Yes_______ If so, please describe ______________________________

______________________________________________________________

# RESEARCH AND EVALUATION IN AN OEO NEIGHBORHOOD HEALTH CENTER

## COMMUNITY GROUP HEALTH FOUNDATION, INC.
## Washington, D.C.

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The long range objectives of the Center were designed to:

- intervene in the poverty cycle through improving the health conditions of the residents of the Upper Cardozo community by providing better health care.
- improve income and manpower development by providing jobs in health service related fields that afford upward mobility.
- promote change in local and national institutional patterns of delivering health care, and developing health manpower by demonstrating new and improved approaches.

The immediate goals of the Center are defined and identified as follows: comprehensive, coordinated, and continuous services provided by the Center program should include preventive health services, diagnostic service, treatment, family planning, comprehensive in-home care of the chronically ill and other home health services, rehabilitation services, dental care, mental health services.

The Center must be accessible to residents and deal effectively with barriers to medical care usually encountered by the poor, including costs, distance, transportation, language, hours during which services are available, and cumbersome intake and eligibility procedures.

Health services must be acceptable and accessible to patient and must provide mechanisms to eliminate the problems that have so frequently plagued other health service institutions for the poor, including unpleasant physical surroundings, crowding, long waits, and depersonalization.

Health services must meet high standards of quality, be under competent professional supervision, and include continuing and effective quality controls.

The care should be family oriented and all members of a family should be treated by the same physician, to the extent that the physician or team of physicians are trained to provide the needed care.

The responsibility of physician for patient's care should continue when the patient is transferred to a specialized professional or health facility and between clinical episodes.

The Center should provide employment and training opportunities to attract and train residents from the community to perform jobs in the health services field and offer placement in positions offering upward mobility.

Center patients' services are to be coordinated with all other community sources of health services, and with other non-health resources which serve the neighborhood such as schools, churches, social agencies, etc., with arrangements made for cross-referrals and exchange of service.

## TARGET POPULATION

Preliminary base-line data developed by National Opinion Research Corporation (NORC) in a survey of the seven census tracts in the Upper Cardozo Area projected a total population of 45,000 within the target area. Of this figure some 15 percent or about 7,000 persons, representing the eligible residents of the community, will be served by the Center in its initial attempt to increase the availability of medical services to this area. This target population represents families who are eligible under the OEO poverty guidelines, the local Medicaid guidelines, or the Medicare program.

The principal reasons for selecting this specific area were: community initiation of the project starting back in the early 1960s and continuing community support ever since; socioeconomic mix; lack of access to adequate facilities by the target population; high incidence of health and social problems.

While these and many other reasons must be viewed as elements in establishing a rationale for this Center, a somewhat closer scrutiny of available data points out significant factors used in determining the location.

## DEMOGRAPHIC FACTORS

Upper Cardozo is a multi-faceted and diverse community. According to preliminary data resulting from the NORC survey, the mean income of the community is $5,800 with extreme distributions in range. Forty-one percent of the families have a pre-tax income of less than $4,000 per annum, while 16 percent of the families earn over $10,000 a year. Seven percent of the population is on welfare. Four of the seven census tracts contain a disproportionate number of poverty or near poverty families. Ethnically, the community is 79 percent Negro-American; 12 percent Caucasian; and eight percent Latin and Caribbean American, most of whom are Spanish speaking.

The median age of the population is estimated at 27 with 25 percent of the population between the ages of one to 13, and seven percent over 65. The family's average size is 2.7 persons with 32 percent being single member units.

The median completed grade of schooling of the head of household is grade eleven. Thirty-three percent of the households are headed by females.

The median residence in the neighborhood is four and a half years with 19 percent of the families living there less than one year while 30 percent have been in the area for ten or more years.

The preliminary NORC survey information does not provide detailed health status and utilization data for the community, the specific demographic characteristics of our target population of approximately 7,000 people, or correlate demographic characteristics by census tract. These kinds of analyses will be possible when the final information is received. At that time, it will also be possible to correlate the NORC findings to other recent studies of the Upper Cardozo Area, including the Mayor's Economic Study, the Redevelopment Ford Agency studies of Metropolitan Washington, and other studies conducted by the United Planning Organization (the District of Columbia CAP agency), and the District Government.

In the meantime, certain things are clear. Based on 1967 Health Department figures, using such traditional health indicators as infant mortality, tuberculosis, venereal diseases rates, etc., the Upper Cardozo area is among the highest in the city. In addition, it can be inferred from the data available that the poorest, the largest, the least educated, and the least healthy Negro families are disproportionately concentrated in four of the seven census tracts in the area.

## ELIGIBILITY AND ENROLLMENT

There are five categories of patients that are seen by the Center: eligible, ineligible emergency, Medicaid, outside the target area, and employees. Eligible families must (1) live in the target area boundaries; (2) have a Medicaid or Medicare card *or* have a family income that falls within the OEO poverty or District of Columbia Medicaid income guidelines. Both of these guidelines relate family size and family income and are quite close in terms of income allowance. If a family lives outside the area, or does not have a Medicaid or Medicare Card or meet prescribed income guidelines, that family is classified as ineligible.

To save the patient time and the humiliation of eligibility checks, the registration takes the word of the registrant on address and income, and no follow-up investigations are made by staff. If a family is eligible for Medicaid, but not currently enrolled, an effort is made to start application procedure.

The eligible family is entitled to full comprehensive, family-oriented care.

An ineligible patient is treated only on a one-time emergency basis and is referred to another institution for any follow-up care. According to regulations of the District of Columbia's Medicaid Program any agency that accepts Medicaid funds must treat all eligible District of Columbia Medicaid patients, no matter where they reside in the city. Since the Center is heavily dependent on Medicaid reimbursements, it treats those Medicaid patients from outside the area on an individual, episodic basis almost exclusively.

The Center employees are given general screening exams and are treated for episodic health problems that arise.

The enrollment process is family-oriented with the head of the household or a responsible member of the household completing a Family Registration Form, which collects such demographic information as tenancy status, census tract, number of related and unrelated household members, family income, and welfare status. One copy is distributed to the Registration Desk, one is attached to the head-of-household's Medicaid chart, and the other is sent to Bio-Dynamics, Inc., for data processing.

An Individual Registration Form is made out on an individual family member when he comes into the Center for treatment. This form, which collects information on age, sex, marital status, race, ethnic group, employment, and education is attached to the patient medical chart, and copies are sent to accounting for billing purposes, and Bio-Dynamics for statistical reporting.

All patient data, including medical records and registration information are filed by a seven digit Family number. The first five digits are the Family designation which is categorized so as to make a ready distinction between eligible, ineligible-emergency, Medicaid outside the area, and employee patients. The last two digits are the Individual designation which indicates his relationship to the head of household.

A representative sample of the population registered could easily be drawn from the entire numbering system or any of the specific categories. A block of six hundred eligible, pre-registered patients already has been set aside for possible follow-up study.

Currently there is no plan for systematically reviewing patient eligibility or enrollment. However, as the staff finds changes in address and Medicaid status affecting an individual's eligibility in the program, this information is routinely supplied to the registration desk, medical records, accounting and Bio-Dynamics.

## MEDICAL CARE PROCESS–UTILIZATION

The Center is presently installing a computerized information system with the help of Bio-Dynamics, which will collect information on the characteristics of the patients utilizing the Center and the services being provided to these patients by the Center staff. This information will be utilized for management evaluation and reporting, billing and research purposes.

At present, the Center is using standardized pre-coded forms to collect service information on physician's encounters, dental encounters and lab orders. The physician's encounter form, used by all the medical doctors on the staff, collects data on the date of the encounter, type of provider, service location, type of encounter, length of encounter, services rendered and diagnosis. The dental encounter form, used by all dentists and dental technicians, obtains the same information on dental services minus diagnosis. The lab form indicates the date ordered, the provider who requests test, the location of the processor, and the specific test ordered.

To provide utilization data, information from the above forms and from patient registration forms are used in an attempt to correlate the frequency of encounters, frequency of patient visits and patient characteristic variables.

The Center is presently designing forms to monitor other professional encounters, including services provided exclusively by nurses, social workers, family health workers and x-ray technicians in the Center. The record of home visit encounters will be used to monitor services provided by all staff in the home, and External Referral information will be used to measure direct and indirect health service referrals made by the staff to outside agencies. The External Referral Form will indicate number of admissions to extended care facilities and hospitals, including information on number of in-patient days, services provided and number of live and still births.

As a Comprehensive Neighborhood Health Center, the provision of preventive services is a very important feature of the program. For the purposes of designating types of physician encounters, the staff attempts to distinguish between episodic care, long term health care management, initial health assessment and routine or preventive care. Routine and preventive care are defined as including encounters for pre-natal care, postpartum care, pregnancies without complications, routine physical examinations (including family planning guidance), preventive immunizations, health education and counselling, well child and well person care. Although prevention is an important feature of the program, the analysis of data collected in the first month of the Center's operation indicated that use of preventive services was minimal.

In connection with dental encounters the staff attempts to distinguish between diagnostic, preventive and therapeutic services. Preventive services are defined as routine and preventive prophylaxis, topical fluoride application, structural dental health education, and other preventive services such as protective mouthguards and diet analysis.

The patient registration and service utilization information will be tabulated at least monthly. The Center eventually plans to use this information to produce a billing print-out as well as statistical reports. Similar information systems, although not quite as extensive, are being installed in the various OEO

Neighborhood Health Centers across the country. When these installations are further developed there will be the opportunity for comparison on certain utilization indices with other Neighborhood Health Centers having similar populations and programs.

## ATTITUDES AND BEHAVIOR

There are a number of crude indications in our present record system which might be used in measuring patient attitudes and behavior.

In the Family Registration process, each head of household is asked about who referred him to the Center. Changes in referral patterns may indicate changes in patient acceptance, health education efforts and outreach activities.

The experience of other Neighborhood Health Centers indicates that the broken appointment rate runs extremely high. The Center's appointment form provides for a regular tabulation of data on appointments cancelled and no-shows by type of health care provider. Follow-up studies may be done on the above data to ascertain the reasons for them, including patient dissatisfaction. This appointment information could be correlated to the patient characteristics and to Center's registration data which is regularly collected in the registration process.

Another possible tool for measuring patient behavior is the Center's External Referral Form which is currently being developed. Among other things, this form will enable tabulations on the number of Center-initiated referrals for which the patient did not follow through.

A short questionnaire study is also being considered to determine patient acceptance of the services provided by the Center. The method of analysis might include a short interview of a small group of registrants, perhaps our pre-registered population, comparing the attitudes of a sample of registrants who regularly utilize service and those who do not.

One of the main objectives of the Center is participation of the community in the operation of the Center. There is an Advisory Council, whose membership will eventually include a majority of persons who are eligible for care in the Center. In addition, one-third of the Board Members are representatives of the local Community Action Agency and are considered quasi-community spokesmen. A great number of the employees, including all trainees, are residents of the target area.

No specific measures have yet been developed for measuring progress toward this objective. However, among the dimensions that the Center will want to consider are: (1) To what extent is the community represented? (2) How much participation is there? (3) What effect has the community participation had at its impact points, including the Advisory Council, the Board, the staff, community organizations and residents? (4) How adequate is the process of community participation used?

There are no plans at the moment to formally study staff attitudes and behavior. However, the Center does have a one-year technical assistance contract with the University Research Corporation (URC) of Washington, D.C., to help the staff better analyze and define professional and para-professional roles and responsibilities in the Center and begin to develop realistic career ladders for para-professional staff. As an off-shoot of URC's work with the Center, there is much information feedback on staff morale, satisfaction and behavior.

## RESEARCH AND EVALUATION

The Research and Evaluation Department of the Foundation will be devoted to coordinating the specific research projects related to the delivery of health care. An on-going evaluation of the medical care process will enable the administration to improve the decision-making capability by providing accurate information and analysis. Research will be conducted by all divisions of the Health Center structured by the Research Division.

The staffing patterns will be as follows: Director of Research, Deputy Director, Information Retrieval Specialist, and Secretary. Additional personnel may be assigned during collaborative studies, and consultants are available. The Research Department will be under the auspices of the Health Center. In addition, it will work closely with Howard University Department of Community Health Practice.

## TEACHING

A major effort is being made to bring disadvantaged community residents into the health service work force. The success of this effort will be measured in terms of numbers trained and employed as well as how effective the residents become as members of the health care delivery team. The training categories are family health workers, dental assistants, dental x-ray technicians, dental laboratory technicians, medical laboratory technicians, medical x-ray technicians, health educator aides, medical records aides, pharmacist aides and physician assistants. This teaching program is operated by the Center in cooperation with Howard University and Freedmen's Hospital as well as other agencies.

Staff in-service training will serve to improve the skills of all employees. Staff members will be offered on-site training and encouraged to take advantage of "release time." Courses are offered at Howard University, Washington Technical Institute, as well as other organizations which are able to offer certification in whatever field of study has been completed.

The Center serves as a training site for a variety of students enrolled at Howard University schools. The medical complex including the schools of medicine, nursing, dentistry, pharmacy and nutrition have plans to include the Center in the field service curriculum.

Resident physicians and dentists will participate in direct services to patients as well as community activities. These physicians will be oriented to the working of our group practice plan. Howard University Department of Medical and Dental Community Health Practice will be primarily responsible for these aspects of the program. Faculty supervision of the undergraduate and post graduate programs is expected.

The evaluation staff of OEO plans collaborative studies of all neighborhood health centers in the field of manpower. This study will indicate patient staff workload ratios, staffing characteristics, staff satisfaction and aspirations, salary comparability as well as relationship between "Center trained" staff and "professionals."

## OUTCOME MEASURES

The major focus of the Research and Evaluation Department will be to develop appropriate and reliable measures of several outcomes. This is glib expression of the desire to measure several aspects of a center's impact on the community; however, these studies are exceedingly difficult to develop so that the measurement reliability supports the contention made by the investigation.

We have selected four areas for study within our organization and will participate in collaborative studies with Howard University Center for Community Services, the National Medical Association Foundation and the District of Columbia Health Department. We have also been requested to participate in studies conducted by Tufts University, the Washington Heart Association and the National Academy of Sciences.

The collaborative study to be conducted by the Howard University Center for Community Services will measure sociological as well as health aspects of the neighborhood health center in Shaw and Cardozo areas in Washington, D.C. This study will include our registered population, that of the adjacent area without a neighborhood health center, and another area which has a 314-E project called a "Group Practice Without Walls." The studies include epidemiological evaluation of such tracer Health States as perinatal mortality, TBC rate, otitis media, dental caries and hypertension; utilization patterns as reflected in survey studies to be performed by the District of Columbia Health Department; consumer satisfaction as indicated by in-house surveys at each establishment; cost analysis; health care process; and citizen participation.

The Center Research and Evaluation Department will perform in-house evaluations as indicated in earlier sections. A research project to determine the efficiency of the health care plan is being developed, based on the following hypotheses: 1) that paramedical personnel can extend the efficiency of scarce physician and dentist staff; 2) that compliance with the provider's instruction increases the efficiency of the delivery system.

The method will include a comparison of the two family-care teams' ability to deliver care, using one team of nurses and paramedical personnel to re-enforce all physician instruction, and the other without this additional device. In the former case, re-inforcement will take the form of consultation with a nurse and/or family health worker after each physician visit. A home visit will be made to see if there has been complete use of all possible resources. The second team will omit the consultation and follow-up visit and use resources only upon patient's request.

The team evaluation will be considered in terms of achievement of health care goals. These are examples: control of major disease problem, using biological measurements with diabetes serving as one index disease; reduction in disability days; compliance with physician instruction; patient comprehension of his disease; patient attitude toward delivery system as indicated by questionnaire; number of visits needed to achieve a biological outcome, for example, control of hypertension.

## IMPACT ON OBJECTIVES

The Center is presently trying to design measures to show how well the program is meeting its overall objectives and immediate goals. Examples of specific measures are given:

### Comprehensive Care

| Goals | Methods |
|---|---|
| To immunize children before they attend school against diptheria, pertussis, tetanus, polio and measles. | Audit charts to see if immunizations are recorded and given: immunization survey in community or among mothers bringing their children to the clinic. |
| To obtain and have recorded by the third visit a complete medical history and physical examination of all children and adults attending Center clinics. | Chart audit. |
| To detect tuberculosis and effectively treat cases and recent converters. | Chart audit for tuberculin-testing and treatment of recent converters; studies of compliance with medication using urine testing for INH. |

| Goals | Methods |
|---|---|
| To detect early carcinoma of the cervix or pre-malignant lesions. | Audit charts for obtaining and recording Pap smears. |
| To deliver adequate home services. | Chart audit of patients eligible for home services to determine if they have been received; interview patients receiving home service to determine attitude toward this service. |
| **Coordinated Services** | |
| To insure that communication and referral to back-up hospital occurs. | Chart audit to determine lag period from time of referral to hospital until return; completeness of communications and also follow-up procedures. |
| **Continuous Care** | |
| To insure continuity of care. | Chart audit to determine number of physicians, hospitals or other providers involved in the care of a single patient over a period of time. |
| To determine if medical care is acceptable to the population. | Calculation of broken appointment rate; survey of attitudes. |

## COSTS

At the present time the Center has no cost accounting system other than the traditional object classification system. It is considering the adoption of a functional cost system currently being developed under the auspices of OEO. This system would distribute costs on an accrual basis, including detailed breakouts for services, training and research which would be aggregated quarterly. Utilizing this system with an ongoing information system, it would be possible to begin developing unit cost data. The OEO system is visualized as a national reporting system which would not allow comparison between all neighborhood health centers, but would allow comparisons between other centers with similar clinics and programs.

# EVALUATION OF HEALTH CARE DELIVERY IN THE COMMUNITY HEALTH CARE CENTER PLAN NEW HAVEN, CONNECTICUT

G. K. MacLeod, M.D.

The general objectives of the Community Health Care Center Plan in New Haven are to provide prepaid, comprehensive family health care through a medical group practice within a community-sponsored program, and to collaborate in the training of personnel for the group practice of medicine and in the performance of research and evaluation studies–through an affiliation with the Yale-New Haven Medical Center. The major objectives of the Plan are to:

- provide comprehensive family health care through a group practice mechanism, emphasizing the importance of continuity and coordination of services in preservation of well-being, in prevention of ill health and in treatment of disease; promote safeguards of high quality while seeking economies in the utilization of skilled manpower, inpatent facilities and specialty resources; meet the fiscal needs through contractual prepayments and cost reimbursements; and achieve satisfactions for both the population served and the providers of service.
- experiment on the design of group practice teams for effective utilization and training of personnel; train next-generation physicians and nursing practitioners for effective participation in a group practice setting; and train personnel for medical care administration, health education and community service.
- perform health services research through pre- and post-enrollment studies; evaluate service and training objectives through ongoing studies; and, eventually, undertake special administrative and clinical epidemiological studies.

## EVALUATION

Current design and development projections provide for studies and evaluation of accumulating experiences within the service and training programs of this demonstration project. A partial list of proposed topics for study includes the incidence and prevalence of illness, utilization of medical care services, patterns in the need and receipt of care, and attitudes toward illness and medical care—all in relation to social, economic, cultural and demographic characteristics of the patient population. We also propose to undertake studies on the economies of the pre-payment mechanism; studies on the effective use of provider personnel; studies among the enrolled population on the actual utilization of the group practice and of outside services; comparative studies on illness, the receipt of medical care, costs, etc. among enrolled and nonenrolled populations in the community; studies on the measurement of quality of care; and eventually, studies of end results. The studies should extend to observations to identify problems in the start-up and in the early years of operation; to learn the consequences of enrollment on a "dual choice" (voluntary) basis; to explore health center design and interrelations between a community-sponsored comprehensive health care program and a teaching medical center; to project expanded programs for dental and psychiatric services beyond the limited provisions proposed at the outset; and to forecast the potential need for an automated multiphasic health screening program.

The Health Care Plan is intended to be experimental with respect to the structure of the group practice team itself; to explore, test and evaluate alternative patterns in organization and staffing for comprehensive family health care; and, whenever possible, to upgrade the functioning of physicians and nurses on the team. The initial number of subscribers will determine the number of alternative experimental group practice "modules." With small enrollment, only a single pattern may be feasible, leaving further elements of design to be introduced and tested at a somewhat later date. If the initial enrollment is large, two or more designs may be implemented at the outset. Studies and evaluation will also be performed on methodology and productivity in the training of professional, administrative, technical and supporting personnel for participation in comprehensive continuing care through prepaid group practice.

For purposes of research and evaluation, the Plan intends to enlist the support of the Yale-New Haven Medical Center, in the form of faculty and cooperating personnel from the Department of Epidemiology and Public Health (DEPH) and from other departments of the Medical Center.

Since the New Haven Plan is still pre-operational, our present focus is primarily on studies of population groups, design of expected operational procedures and preparation for evaluation of future performance. Such division into categories is not intended, however, to segregate areas which should be interrelated. The first steps, now underway, include pre-enrollment population studies to compile benchmark data in advance of becoming operational, and the design of a system for recording and retrieving clinical and administrative information.

Opportunity exists to coordinate preliminary research activities with other community or university-sponsored comprehensive health care plans which, by present perspectives, will utilize the resources of the Yale-New Haven Medical Center for certain specialty services and inpatient hospital care in much the same fashion as the Community Health Care Center Plan.

## TARGET POPULATION

The New Haven Standard Metropolitan Statistical Area has about 350,000 people, with about 140,000 in the city itself. Most medical care in the Greater New Haven area is provided by physicians in fee-for-service solo practice, using two large teaching general hospitals. Both of these hospitals have busy emergency rooms whose utilization has approximately doubled over the past ten years, much of it nonemergent. Outpatient clinics in both hospitals function mainly as teaching facilities and are oriented toward subspecialty care; they are not set up to provide continuing comprehensive care. In addition, there are two neighborhood health centers in New Haven–primarily for medically indigent children–in ghetto areas immediately adjacent to each hospital. Although neither program charges for its services at present, one of them is investigating the possibility of developing a prepayment mechanism.

Primarily because of the research and demonstration implications of this project, the Plan has been designed to care for a population representing, more or less, a cross section of the Greater New Haven area. In part because of a pre-judgment of the desirable level for a single comprehensive group practice unit and in part because of the tie-in with the Medical Center, our target population has been set at about 30,000.

The Plan has historical ties with the labor movement of the Greater New Haven area and was strongly supported in its initial planning and development efforts by the union leaders and memberships. Consequently, the population to be served will, in part, be labor union members and their dependents–primarily employees who have achieved dual choice provisions through negotiated contracts.

In attempting to achieve a cross sectional representation, enrollment will also be open to professional, management and other nonunionized groups who are able to provide for participation of their memberships on a voluntary basis. In addition, we plan to include up to 20% of the existing enrollment from the medically indigent and public assistance populations. As far as possible, nongroup (individual) enrollment will be avoided–at least during the initial stages–because of the risk of large adverse selection.

Preliminary activities to achieve the enrollment of the target population for the Community Health Care Center Plan have been organized around a small full-time staff, working with the health education committee of the Central Labor Council which represents nearly all labor unions in the area. A subcommittee of the Community Health Care Center Plan Board of Directors is also concerned with enrollment.

Pre-enrollment studies are now underway, with special emphasis on those groups which already have dual choice provisions and whose memberships will be eligible to enroll in the Community Plan. Similar pre-enrollment studies will soon be conducted on the welfare population. The intention is to conduct subsequent parallel studies among those who do and those who do not enroll in the Plan–for future comparisons with pre-enrollment benchmark data.

Specific data to be collected after actual enrollment begins have not yet been determined. It is intended, however, to compile comprehensive information about enrollees, extending to demographic and bio-medical histories for individuals and families.

## MEDICAL CARE PROCESSES

*Utilization:* We intend that our functional performance and record system shall be sufficiently sophisticated to provide for the storage and retrieval of information on the characteristics of the target population, on the services provided (to whom, by whom, where, why, etc.), on the progress and outcome of medical care episodes, and on allocated costs. In other words, we hope to have–more or less routinely–a considerable body of data on the entire service program. Thus, analyses along these lines should lead to data on the care provided in each individual case, on the care in each episode of illness, on care in cases with related or unrelated multiple conditions, on care received by individuals or families over a period of time, and on the composite of all care provided in the Health Care Plan.

The number of physician services by diagnosis, by unit of time, by type of physician, by place of service, by patient characteristics and by frequencies among enrollees will be within the capacity of our research and evaluation undertaking.

Similarly, the number of services by health professionals other than physicians, the number of hospital admissions as characterized by length of stay and diagnosis, the number of admissions to extended care facilities and other inpatient facilities, and the number of preventive techniques are all within the framework of our proposed administrative studies and our research and evaluation techniques.

Of particular importance will be the breakdown of the various categories of enrollees (for example, union members, other employees, welfare recipients). We should uncover–through periodic routine reports–special needs for administrative and clinical purposes. A specific time-table of the frequency of tabulation of data is difficult to make. However, we expect to provide for continuing collection and frequent analysis of data relevant to the daily or routine operations of the Plan while compiling and analyzing data at such frequency as will be indicated for information which can be batched for special studies.

In addition to the aforementioned considerations, we will also have to be alert to the importance of designing our data collections for comparability with programs such as the Connecticut Utilization and Patient Information Statistical System (C.U.P.I.S.S.) which is to be a statewide system developed under the auspices of the Connecticut Regional Medical Program for the routine assembly of patient care information; for special conferences such as this one; for participation in cooperative studies under the auspices of the National Center for Health Services Research and Development or the Group Health Association of America; and for comparisons with nonenrolled populations locally and with national data. Efforts to coordinate data with other developing prepaid group practice plans in New Haven will be facilitated through the Committee on Community Health Services at Yale.

*Attitudes and Behavior:* Since the Community Health Care Center Plan was designed to have a Board of Directors representing various sectors of the community, including consumers, it is obvious that their participation will be present at the policy level.

We intend to undertake periodic studies on the attitudes and the expressed satisfaction of the enrollees for correlation with their behavioral patterns, extending to and including the degree of patient compliance with prescribed regimens. Specific studies–such as those on the number of broken appointments, on the proportion of patients with repeated records of broken appointments, on physicians whose patients have high rates of broken appointments, and on the number and characteristics of enrollees who have not used services–represent information which would also be readily retrievable from the record system now in preparation.

Because of the expected accumulation of social, economic, geographical and other data from *pre*-enrollment studies, correlation with information relating to availability and accessibility of services, waiting time and amenities will be feasible at regular intervals through the follow-up mechanism of post-enrollment studies. In addition, corresponding comparative studies are contemplated–as far as may be feasible–among non-enrollees in the community having other insurance or no insurance.

*Research:* The Plan design includes provision for a research unit and staff. Much of the previously mentioned research and evaluation will be pursued wholly by the Health Center research staff in collaboration with administrative and clinical staff, but some will be undertaken in collaboration with faculty and graduate students from the Department of Epidemiology and Public Health (Section on Health Services Administration and Section on Health Education), from the Yale (Graduate) School of Nursing and from other departments of the Medical Center and the University. The research unit will be headed by a director with a joint appointment at the Community Health Care Center Plan and the Department of Epidemiology and Public Health. The staffing pattern provides for research assistants, systems analysts, programmers, secretarial and clerical assistants, field personnel, etc. Physician, nursing and administrative consultants will be used whenever indicated.

Baseline studies have already been undertaken on the prevalence and characteristics of health insurance among the general population in the New Haven area; the cost of such insurance; the utilization of health services by illustrative samples of families and the costs; and the attitudes of families and various population groups toward medical care received and in regard to participation in a prepaid group practice program. These studies are planned on both pre- and post-enrollment bases.

The record system has had and will continue to have considerable attention directed toward the feasibility and extent of automation. It will serve to record and integrate whatever data is needed: to facilitate the delivery of medical care to individuals served by the Plan; to operate the prepayment aspects of the Plan; to perform research studies which involve evaluation of the services provided by the Plan; and to make comparisons with data derived from other population groups not served by the Plan. The records will also be designed for use in the collection of demographic and medical care data for research and evaluation purposes.

Evaluation of the effectiveness of the medical records system will be performed through studies on the efficiency of the provision of medical care by the group practice teams; through the analysis of individual medical records for utilization review and case studies; and through the efficacy of the record system itself.

This system is being developed under contract with the National Center for Health Services Research and Development, with provision for interlocking, if feasible, with the systems of the Yale-New Haven Hospital, other local area medical care plans and C.U.P.I.S.S.

*Training:* For purposes of medical education and training, one of the fundamental objectives of this Plan has been to promote the linkage of a teaching medical center to a multispecialty group practice organized to provide continuing comprehensive medical care. Thus, a residency or fellowship program for the training of primary physicians is a logical extension of the Community Health Care Center Plan through its affiliation with the Yale-New Haven Medical Center.

Not until most physicians-in-training have reached the advanced residency or fellowship level are they ready to assume full responsibility for continuity and coordination of the care of patients. For those interested in training for primary care, we propose that the last one or two years of residency or fellowship training–in internal medicine and pediatrics–be divided equally between the Plan and the Medical Center. Patients will remain under the care of their own primary physicians after the residents have completed their tours of training, thus preserving elements of long-term continuity of care for the enrollees. In addition to offering expanded opportunities for the training of primary physicians, the Plan would provide a new resource for a portion of the Medical Center training programs in surgery, obstetrics and gynecology, radiology and psychiatry and possibly some of the subspecialties.

Undergraduate medical students and nurse-clinicians-in-training will have an important, although limited, involvement in the ambulatory activities of the Plan. Because students are slow to complete both routine and diagnostic workups, they would unduly prolong the amount of time spent by patients and families away from work, home or other activities. Nevertheless, both nurse-clinicians-in-training and medical students will benefit from the availability of the Plan in several ways: attendance at lectures and seminars on the provision of medical care, with the group practice plan as a working model; observation of personalized patient care in a functioning ambulatory group practice facility affiliated with a medical center; opportunity to examine member patients of the group practice plan when they are in the hospital and to observe their inpatient care; participation in the delivery of patient care at various levels–as assistants to staff physicians or nurse clinicians or as members of the team of supporting personnel; and investigation of clinical and epidemiological aspects of medical care for research projects at the undergraduate level.

In addition to clinical training, an important function of the staff of the Plan will be to train public health residents or fellows from the Department of Epidemiology and Public Health or other schools of public health in the administration and delivery of medical care and in health education. Both administrative and clinical personnel should be available to instruct these trainees.

The responsibility for funding and administering all Community Health Care Center Plan training programs should be under the auspices of the Plan in cooperation with the Medical Center. Income accruing from services by trainees will offset some portion of the training cost, but will need supplementation from other resources.

An affiliation agreement with the Medical Center provides for assistance and recruitment of an adequate staff of physicians and other personnel qualified for professional, educational and research functions. It also provides for periodic review of the health services provided and the educational and training activities conducted by the Plan. General guidelines for the training programs are laid down by specialty medical boards and other medical institutional accreditation committees.

## OUTCOME MEASURES

Effects of the Plan's operation on the health status of its enrollees will be evaluated from data on the incidence, prevalence and prognosis of disease and by measurement of functional capacity, morbidity and mortality among the enrollee population–obviously after the Plan has grown to sufficient size and has had a long enough period of operation. We intend to make every effort to obtain similar data from other populations although measurements of the prognosis of disease will be much more readily accomplished within the Plan than on comparable groups outside our enrollment. Additional study areas may be set up to explore a variety of problems and programs.

Special approaches toward the measurement of quality of care and outcome will be through internal and external audit. We hope to compare staff performance within the Community Health Care Center Plan on the basis of standards now being developed to study the performance of some clinical faculty members at Yale University who are in community practice, and by comparison of performances within the Community Health Care Center Plan with peer standards of good medical care. These studies will be supplemented by an external audit of clinical care carried out by a joint review committee from the Medical Center and the Health Center staff. We will be aware, of course, that both internal and external medical audit influence outcome and therefore become variables affecting performance in comparison with a standard or an experience not subject to audit.

One of the most important measurements of effectiveness of the New Haven experience will be the overall success of the Plan: its acceptance by the community at large, its productivity in manpower training and its ability to generate meaningful research data and evaluations. These measurements will be effected, in large part, through historical records. This can be done in a scientific fashion through observation of the experiences of the Plan–both by people directly involved in the Plan and by others qualified to observe and evaluate its operation.

## COST

Computation of total costs must include not just start-up and operating expenditures, but also the costs required for the attraction of personnel, the pre-start-up costs and the costs of feasibility studies. In many instances, these are donated–in full or in part–through allocation of time and research effort by interested institutions and universities or by voluntary contributions of time from concerned citizens. At any rate, there will probably never be a full accounting of much of the expense in time, money and heartache of the many plans that never got started–not to mention existing plans, those which are near or in an early operational phase, and those which are not yet on the drawing boards.

The New Haven Plan will make every effort to compute the total cost of actual start-up, and unit costs for services, wages, overhead, facilities and donated time for each of the operational areas of service, training and research. This accounting is being designed by ourselves with consultation from an accounting firm with special expertise in this field. Special studies should reveal the additional medical expenses incurred by Plan subscribers outside of the Health Care Center so that we will know the per capita cost in toto–not just the cost of services provided by or through the Plan. Also, special studies among nonenrollees should give us comparative figures for evaluations of what we are and are not achieving in cost controls.

# EAST BALTIMORE MEDICAL PROGRAM

Malcolm Peterson, M.D.

The establishment of a health care program in the East Baltimore community was conceived as a necessary component of the activities of the Office of Health Care Programs even before that administrative unit of The Johns Hopkins Medical Institutions came into being in February, 1969. The objectives of the Office of Health Care Programs in establishing the East Baltimore Medical Program have been to develop in the community surrounding The Johns Hopkins Hospital a service program which would:

- provide a higher quality of continuous, family-centered, comprehensive health services to a defined population.
- be responsive to the perceptions and expectations regarding health by the population to be served.
- provide a "community medicine" setting in which the research and educational objectives of The Johns Hopkins Medical Institutions would be sustained.
- permit experimentation with staffing, financing, and organization of the delivery of primary care.
- develop an alternative avenue for the delivery of primary care to the neighborhood residents who have been using, in increasingly large numbers, the Emergency Room and Outpatient Department of The Johns Hopkins Hospital as the number of local practitioners and hospitals have diminished, leaving this institution and its staff virtually the only provider of care to many thousands of nearby people.
- prevent an increase in the institution's fiscal deficit by rendering primary care and perhaps show how the monetary burden might even be reduced.
- provide tangible evidence of genuine concern about the health problems of those people who have come to rely on The Johns Hopkins Medical Institutions for provision of services.
- serve as a model of health care delivery which might be transplanted to other practice settings, locally or elsewhere, or to other teaching hospitals.

## ESTABLISHMENT OF THE PROGRAM

Following preliminary discussions within the Institution, members of the Office of Health Care Programs met with a broadly representative sample of the East Baltimore community at a retreat held in Manresa House in Annapolis, Maryland. Emerging from this lively discussion was the awareness that the residents of the community harbored deep-seated resentment and distrust of The Johns Hopkins Hospital, but they felt that the deficiency of health services plus the expressed commitment of the institution demanded the development of a health care program which would be sponsored jointly by the community and The Johns Hopkins Medical Institutions. Considerable discussion about the geographic base for such a program led to the decision to embark on a program which would serve people in East Baltimore in an area demarcated by preexisting Model Cities boundaries.

As the planning efforts developed, the problems of financing as well as the administrative and programmatic difficulties became increasingly apparent. The consequent temporal constraints on the actual initiation of delivery of care to this entire population led to our recognition of the necessity for a more realistic and tangible starting point.

Accordingly, a population which was readily identifiable and already defined was selected by turning to city housing projects for low income families which were in or contiguous to the Model Cities areas already selected. A review of the records in the Office of Housing and Community Development permitted us to anticipate overall eligibility for various programs of payment for medical services as well as to quantify demographic determinants of service demands.

Assembling the pertinent information on the 8,200 persons living in the four housing projects showed the same data which are depressingly common to most inner-city public housing groups; namely a median age of 14 years, 2/3 of families headed by women, median income of $2,700, median family size of 3.8 persons. Extrapolation from these facts enabled us to recognize that only 75 percent of the population would be eligible for the State Medicaid Program together with the Medicare and Children and Youth Program beneficiaries. The problem of securing funds for payment for services to the remaining 25 percent led us to confer with private insurance carriers as well as federal granting agencies. Initial discussions with Blue Cross and other private insurance carriers confirmed our expectation that funds for health services would not be forthcoming from such sources.

In a series of meetings attended by representatives of the Office of Economic Opportunity, the Community Health Services (314e), Children's Bureau, and representatives of the regional office of HEW, we concluded that a request for these funds directed to the Federal Government might receive favorable action with the total sum forthcoming from this or some other consortium of agencies. Accordingly, a proposal was submitted in October of 1969.

## BUDGET

Using utilization data from the National Health Survey and the State Medicaid experience, we estimated, for a population of 5,000 individuals enrolled from the defined population, the costs of services as they would have been paid by the Medicaid Program in Maryland. These include inpatient, outpatient, and pharmaceutical expenses. Dental care and preventive services were felt to be additional needs of the program, but payment for these would have to be arranged from the other sources of funding.

In addition to the preparation of the proposal to the Federal agencies, a prolonged series of negotiations with the State Department of Health evolved a contract for the prepayment of the services for those enrollees who would be eligible for care under the Title XIX legislation. This agreement which is to be signed by all parties in the immediate future states that the Hospital will receive that amount of money which is equivalent to the average charges for care at The Johns Hopkins Hospital at the customary level of reimbursement. This sum of money, approximately $280 per year per person, will be paid based on the dates of enrollment of the recipients and verification of their eligibility for such payment of services at six-month intervals. Furthermore, the contract provides that for the initial year of experience the State will guarantee payment for those expenses which are allocable to the Title XIX Program but which were in excess of the anticipated operating budget. Should there be a savings in the cost for care rendered to Medicaid recipients, the agreement is for a return of 50 percent of this excess to the State with utilization of the remaining 50 percent for payments to the physicians as incentive reimbursement. Should the limits of such incentive reimbursement be reached, the remaining funds will be used in improvement of the services.

The extrapolation of similar anticipated expenses for services to the remaining 25 percent of the target population enabled us to establish the working budget to be supported through federal grants.

## ADMINISTRATION

Throughout the evolution of these budgetary programs and consideration of the services to be delivered a significant dialogue with members of the community has been maintained. After some delays and travail resulting from our inability to discern who "represents the community," a committed and very strong-minded group of individuals emerged. Incorporated as the East Baltimore Community Corporation, these black people presented an unyielding but appropriate demand for a policy-making role in the evolution and operation of the East Baltimore Medical Program. Every word of each draft of the proposal submitted to the federal agencies and the contracts prepared with the State Department of Health was read aloud at meetings of the East Baltimore Community Corporation and attended by staff of the Office of Health Care Programs.

The By-Laws of the East Baltimore Community Corporation were written by its members with a clear understanding on everyone's part that this group would be constituted to establish more community service programs than just a medical program in East Baltimore. Nevertheless, this activity was the immediate reason for the existence of the East Baltimore Community Corporation and has occupied the complete agenda for each of the many meetings held thus far.

Once the status of the East Baltimore Community Corporation had been established, a Joint Working Agreement with The Johns Hopkins Hospital was developed. Many of the considerations in the preparation of this Agreement and the By-Laws for the East Baltimore Community Corporation stemmed from guidelines of the varied agencies with which the program was dealing. Conflicts with the guidelines themselves or the intentions of these guidelines, the preferences of the East Baltimore Community Corporation, and professional judgements by the representatives of The Johns Hopkins Hospital introduced many hours of controversy and dissatisfaction into the negotiations. Evolving from the negotiations, however, has been a clear agreement that the operating budgets will be prepared conjointly by the Administrator of the Program (who is responsible to the East Baltimore Community Corporation) and The Johns Hopkins Hospital (represented by the Office of Health Care Programs). The Administrator will have responsibility for the day-to-day operation of the East Baltimore Medical Program, and he will follow policies which are established by the East Baltimore Community Corporation in agreement with the Office of Health Care Programs.

## SERVICES

The health care rendered to enrollees in the prepaid East Baltimore Medical Program will be rendered from a facility which is located in the neighborhood of the housing projects to be served. Enrollment will be by families and the enrollment process will include assessments of the present health status of the individuals in that household as well as some assessment of their previous utilization of sources of health care.

The health services are to be rendered through a group practice staffed primarily by internists and pediatricians working as part of teams which include outreach workers (family health workers), health care managers (primary care specialists and associates), and mental health technicians. The concept of the team which is coordinated by the primary care specialist is to be one of the main areas of evaluation in this program.

The patients will identify their interface with the health care program in the form of the assigned family health worker. In turn, this family health worker will communicate directly with the primary care specialist to transmit information about the health status within the household. The primary care specialist on seeing patients assigned to him will delegate prevention, diagnosis, treatment, or other management of these health problems to the appropriate members of the team. The mental health technician, pediatricians, internists, obstetricians or nurse midwives, and social workers employed in the program will relate to the primary care specialists; team meetings will be organized as necessary to address the health problems of the household as a group. Any decision emanating from this meeting will be transmitted to the family or individuals involved by way of the family health worker who will be a full participant in the team meeting. Consultation services through the specialty clinics of the Outpatient Department will be rendered as necessary. Basic laboratory services and limited X-ray services will be provided at the health center. Hospitalization at The Johns Hopkins Hospital with continued care by appropriate physicians from the East Baltimore Medical Program will be provided as necessary. Medications prescribed by the staff of the East Baltimore Medical Program will be dispensed from a branch pharmacy located at the Medical Center.

The format of the medical records will be the problem-oriented chart developed by Weed. A tabulation of the utilization of services will be maintained, relying on the format of the information system which is currently being developed for use in the Columbia Program.

## LESSONS TO DATE

Problems encountered in the development of the East Baltimore Medical Program are those reported by others who have mounted similar endeavors elsewhere. We have encountered difficulties with funding, unfavorable responses of local professionals, and disagreements with the community representatives. Thus far, none of these has proved insurmountable, and each of the encounters has resulted in consolidations, realignments, and amplifications of the program to its benefit.

Aside from the difficulties of dealing with disparate sources of funding which result in incomplete coverage of the target population or limit the services to be rendered, the inadequacies of the payment for developmental and start-up costs of such a program have been painfully evident. We have been fortunate in working with some support through a planning contract for the East Baltimore Medical Program, but this has been only a fraction of the cost of development and can be applied only to the creation of the program on paper. The actual start-up cost of the program itself (losses during overstaffing, costs for construction of the facility, expenses involved with the recruitment process itself, the cost for enrolling patients, and the expenses of developing a community board of directors) are not supported through existing programs and are not recoverable from the service monies.

The disapproval of the East Baltimore Medical Program by some of the local professionals who perceive a threat to their economic livelihood has been mitigated through extensive discussions with them about the nature of the program, its limited size, and their involvement.

The mutual commitment to community participation led to the establishment of an agreed-upon program and a satisfactory working relationship between the East Baltimore Community Corporation and The Johns Hopkins Medical Institutions. This agreement and the growing mutual confidence have faltered when representatives of various agencies (each with different guidelines) have intervened to "clarify" the developing relationship between the community and the institution.

## EXPECTATIONS FOR THE EAST BALTIMORE MEDICAL PROGRAM

In addition to achieving the objectives which were outlined above, we hope that the experience in the pilot phase of the East Baltimore Medical Program will provide a secure fiscal and medical operational base on which to expand to a five-fold larger scale of service.

We hope that lessons learned through our experience in the East Baltimore Medical Program might be useful to some of the public and private third-party payors for health care.

We anticipate establishment of training programs which will be advantageous to the residents of the community in which this program operates. Such training has already been initiated in conjunction with a local high school, and one of the East Baltimore Community Corporation members has taken this task as her major effort.

We hope that the students in the health sciences at The Johns Hopkins University will be afforded ample opportunity to see group practice in operation, comprehensive health services being provided, and practitioners functioning in a primary care setting. The research opportunities are manifold. We anticipate that these will be realized by the Health Services Research and Development Center of the Office of Health Care Programs and will be available to medical students and other interested researchers in health care.

The accomplishments to date make us optimistic about the possibility of developing a much clearer understanding of the mutual problems and aspirations of the medical institution and the community in which it is situated. To this end, physicians practicing in the immediate vicinity of The Johns Hopkins Hospital have been given staff appointments. Other dividends are forthcoming as we encounter more frequent expressions of trust and respect from a community which has harbored considerable hostility to the institution.

## CONCLUSION

The East Baltimore Medical Program, a project which has dual sponsorship from the consumers and providers of health care, has been in the early stages of development for almost one year. Lessons which we have learned to date reflect many of the problems inherent in the health care system itself, but they reflect primarily the disorganization of the programs which pay for health services to the lower economic classes in the United States. "Community participation" is a catch phrase which denotes a highly desirable objective, but carries with it the necessity for prolonged and involved negotiations. The rewarding aspects of a program such as this can be seen even before it becomes operational. The benefits which have been realized even before health care has been delivered prompt us to increase our effort to achieve operation of a program which will permit teaching, accumulation of experience, and research, and which promises greater community satisfaction with improved quality of health care.

# THE HARVARD COMMUNITY HEALTH PLAN: THE ROLE OF AN AUTOMATED MEDICAL RECORD SYSTEM IN EVALUATION

Jerome Grossman, M.D.

The specific aims of the Harvard Community Health Plan (HCHP) are to:

- create an effective and economic means of organizing and delivering health care.
- provide students, faculty, and staffs of affiliated medical institutions with an opportunity for studying and teaching comprehensive health care.
- conduct social and clinical research concerning health care needs and effectiveness of health care.

## MEMBERSHIP

Eighty percent of the target population will join through employer groups which offer the Harvard Community Health Plan through a dual choice mechanism sponsored by Blue Cross and the private insurance companies. The remaining twenty percent of the target population will be drawn from lower income neighborhoods enrolled through Medicaid, Medicare, and grants. At present, there is no individual enrollment. There is a 15 to 30 day waiting period before coverage is effective.

## MEDICAL RECORD SYSTEM

Before discussing specific plans for utilization and statistical reports, it is important to understand the medical record keeping system employed at the Harvard Community Health Plan. Because the plan was formulated as one deeply committed to research and teaching, it has worked in conjunction with the Laboratory of Computer Science at the Massachusetts General Hospital in designing and implementing a computer based medical record system. The system has been designed to serve primarily as a medical record, in contrast to a system designed for management–either administrative or fiscal–or for research. However, the system was also designed to have maximum flexibility and a structure such that data for utilization, administration and research would be readily obtainable.[1]

## DATA COLLECTION

Patient data, in coded or pre-structured form, are derived from three sources: 1) the enrollment card; 2) the health questionnaire sent out to all enrollees over the age of 18 (a questionnaire for children is being prepared); and 3) the patient encounter forms filled out for each visit. Data available from the HCHP Information System are presented in the following tables. Additional patient data from hospitals, extended care facilities, and out-of-area facilities are also collected on pre-structured forms.

**Table I. Enrollment Card**

A. Name
B. Address (coded by ZIP code)
C. Date of Birth
D. Sex
E. Marital Status
F. Physician Group
G. Effective Date of HCHP Membership
H. Employer Group
I. Source of Payment (Carrier and/or Medicare/Medicaid)

**Table II. Health Questionnaire**

A. Past Hospitalizations (Year and Reason)
B. Medications
C. Drug Allergies
D. Family History of Disease
E. Past History of Serious Illnesses
F. Review of Systems
G. Social History (Including Working Status, Occupation, and Educational Level)

Table III. Encounter Forms

- A. Administrative Data
  - 1. Date
  - 2. Provider (Coded by Individual, Specialty, and Physician Group)
  - 3. Time, Site, Type of Visit
- B. Medical Data
  - 1. Diagnoses or Problem
    - a. Activity
    - b. Certainty
    - c. Severity
    - d. Progression
  - 2. Diagnostic Studies (Including Results)
  - 3. Medications

At the time of enrollment each prospective member is assigned an individual medical record number and the demographic data entered into a computer system. This establishes an individual patient file which can be indexed alphabetically, by employer group, or by any of the parameters included on the enrollment card. Samples for specific studies can be derived by terminal digit or by other randomization processes. Changes in basic demographic data or family group are entered into the computer system and new demographic output produced. Enrollees who discontinue the plan are so flagged in the computer record, but at present their records are maintained within the system.

We have been in continual discussion with Blue Cross and with the employer groups to work out a comparison of our enrollees to the Blue Cross or privately insured population as a whole. At present, however, such data are not available for comparison.

## INFORMATION

The encounter form deals primarily with coded information about the patient's problems. The diagnosis codes were specifically compiled to be appropriate for ambulatory care. In addition to specific and established diagnoses, they include other types of problems, such as symptoms for which an etiology has not yet been established. For each problem, its certainty, severity, and progression are also recorded.

As a step towards providing comparability of utilization data, this problem code has been developed in conjunction with the Bunker Hill Health

Center. The diagnosis and problem codes have also been cross-correlated with ICDA codes so that comparison with other groups using these codes might be possible. Medications and therapeutic measures are pre-coded and are also included on this form.

A second form filled out at the time of a patient encounter is a master schedule of activities, which is used to order diagnostic studies, consultations, return visits, and referrals, inside or outside of the center. There are also structured forms, by specialty, for the recording of physical examinations and pre-natal and post-natal data. In addition to filling out the above forms, the physician is given the option of dictating a note for insertion in the patient's record.

The two forms and subsequent test results are forwarded to the medical record room for entry into the computer system. With these data the computer then prints out: 1) an encounter report, providing all the information pertaining to this encounter; 2) an updated summary of all diagnostic studies done to date; 3) an updated summary of the patient's medication history; 4) a patient status report. The status report is a dynamic summary of the patient's medical condition. Copies of the report are available in the office of the patient's physician and at the central operator's desk for use in giving emergency care.

These four reports are inserted into the patient's medical record. The transcription of the dictated note is attached to the bottom of the encounter report. The record is then placed in the doctor's box in the record room for verification and signature. Once the reports are signed, the record is returned to the file, and the original coded sheets are discarded.

## EVALUATION

This system provides the physician with a standardized, legible patient record and a current summary of a patient's condition. But in addition to serving as the medical record, the data base is used to produce utilization statistics which are the core of the present evaluation of the plan.

As yet we have no set schedule for tabulation of our data. In the first year we have produced monthly tables concerning: 1) the rate of growth of the enrolled population; 2) the characteristics of that population; 3) the number of visits and number of people seen by service; and 4) the frequency of laboratory tests including X-ray and EKG.

More detailed tables, such as number of enrollees by employer group and age, and medical usage by individual health professional, have been tabulated experimentally. Special purpose tables, such as a list of all enrollees who meet the State requirements for flu vaccination, have been produced on a one-time basis only.

## ATTITUDES AND BEHAVIOR

The record system at HCHP does not provide a direct measure of attitudes of either the staff or the patients. However, it does provide information concerning their behavior, in that it keeps: 1) a record of broken appointments, by type of service and patient characteristic; 2) a record of the number of enrollees who have never used any services; and 3) a positive feedback on the staff's utilization of resources and facilities in terms of number of visits, number of persons seen, and number and type of tests and medications ordered.

## COSTS

HCHP's contract with the insurance companies calls for annual reporting of utilization statistics for employer groups. These data are used in adjusting the basic capitation rate. If utilization by a particular employer group is more than 10 percent above the estimated utilization, the insurers will increase the capitation rate paid to the plan. In the same manner, if utilization is more than 10 percent less than estimated, the capitation rate is adjusted to a lower figure. If desired, costs can be broken down by: 1) patient characteristics (e.g. all patients older than 65); 2) diagnostic classifications (e.g. all patients with diabetes); or 3) functional categories (e.g. the number of physician services by individual practitioner or specialty group, or the numbers and types of diagnostic studies performed).

The plan also provides services for a small number of fee-for-service patients. The costs for this group are kept separately.

## FINAL COMMENTS

In this first year we have concentrated our efforts on creating a smooth system for the delivery of patient care. A most important aspect of this operation is to guarantee the quality of the information we collect; while the computer can accurately store and retrieve data, human beings determine their quality. Therefore much effort has been put into examining the procedures for collecting the data and into verifying the data which has been entered into the computer.

## REFERENCE

1. For further information about the computer-based record system, write the Laboratory of Computer Science, Massachusetts General Hospital, Fruit Street, Boston, Mass. 02114, attention J.H. Grossman, M.D.

# THE MEDICAL CARE GROUP OF WASHINGTON UNIVERSITY: DEVELOPMENT, GOALS AND EVALUATION

**Gerald T. Perkoff, M.D.**
**Lawrence Kahn, M.D.**

The Medical Care Group of Washington University (MCG) is an experiment in medical practice developed by the Division of Health Care Research of Washington University and supported by grants from the Metropolitan Life Insurance Company, the W. K. Kellogg Foundation, and the National Fund for Medical Education. Several defined goals were implicit in the development of MCG and others became apparent during the detailed planning of the medical care program. The plan was developed to compare in study and control patients the effect of an experimental ambulatory health insurance on hospital use and health status. We also hoped to develop a system of family-oriented group practice that would use but would not duplicate the special skills available in the medical center. It soon became evident that it was important to have sound data about utilization and costs of medical services. Such data should identify any savings of hospital expense and show what portion of such savings would have to accrue to a medical group before that group would be on sound fiscal grounds. We also wanted to learn the size such a group would have to be in order to make a significant contribution to the medical care capabilities of the community, and to gain information upon which a plan for improved care of indigent patients could be based. Other goals were to begin a practice which might become a base for teaching comprehensive health care, to provide a nucleus around which faculty interested in health care research could be assembled, and to stimulate health care research in Washington University School of Medicine.

## THE MEDICAL PLAN

The Medical Care Group is a family care plan, staffed by specialists in medicine, pediatrics and obstetrics-gynecology. It incorporates screening and preventive medical care, diagnostic and therapeutic medicine and continuing medical care in one unit, with the aim that both general and consultative specialty services will be provided in a single location. Since the research program to be operated in conjunction with MCG demanded that the medical care delivered be monitored carefully, that accurate records be kept, that a satisfactory control group be defined, and that acceptance by the medical faculty and community of practicing physicians be as smooth as possible, it seemed essential to keep the practice small. Therefore, MCG will have a maximum of 500 study families and a comparable number of control families.

The study families begin care in MCG by appointment for a complete history and physical examination and screening evaluation. If they must be seen for an illness before their complete evaluation, a later appointment for their complete check-up is made at the time of the initial visit. The internist who first sees an adult patient remains that patient's personal physician; the same applies in the case of the pediatrician who first cares for a child. Control families, selected by lottery from the initial enrollment at the time study families are chosen, are given the same complete evaluation as are the study families, and all the information obtained is made available to their private physician for use as he sees fit. Further details of control selection and evaluation will be given later.

All regular office medical services are provided in MCG offices, and physicians are available for patient care 24 hours a day, seven days a week. All hospitalization needed is carried out in the Barnes-Washington University Hospital group, and MCG physicians hold both hospital staff and Washington University faculty appointments. The patient's personal MCG physician remains responsible for his care when he is admitted to the hospital.

When a consultation in any of the specialties not represented in MCG is needed, it is made by the appropriate specialist from the full-time medical school faculty. The consulting physician may see the patient in the MCG offices or in his own office in the medical center. Needed surgery is performed by surgeons of the Department of Surgery senior staff, with the MCG physician maintaining direct patient contact during the surgical admission. Follow-up care is provided by the MCG physician in the MCG offices.

## THE INSURANCE PLAN

The insurance plan was developed as an integral part of the medical care plan with a number of considerations in mind. We knew that there was ample experience with preexisting prepaid group practice plans and that new large experimental programs were being set up elsewhere.[1] For this reason a full prepayment capitation plan did not seem desirable for MCG. Also, particularly in view of the small size planned for MCG, we wished to study a payment mechanism which was intermediate between fee-for-service practice and full prepayment, and which might be more readily adaptable to present methods of medical care organization and practice.

The plan developed in response to these needs uses the principle of prepayment by the insurance mechanism, with the funds received by MCG for services rendered, negotiated between the insurance company and MCG on the basis of current medical fees used in the medical center. Actuarial estimates of utilization provided the basis for these negotiations, and appropriate adjustments are planned at regular intervals. The current payment is $12.75 per month per covered family for the services listed in the following paragraph. MCG and control patients retain the same basic hospital plan they had before enrollment and continue to pay for that plan by whatever arrangements were available to them before MCG was begun. The hospital plan costs are separate from the MCG costs and the only difference between the study and control groups is the availability of the MCG plan to the study patients.

The physicians who staff MCG are salaried, but MCG pays for laboratory procedures, X-ray services, consultations, surgery and other professional services provided to MCG patients on fee-for-service full charge basis. The services provided in the plan include: office visits in MCG offices; night, weekend, emergency and if needed, home calls by MCG physicians; hospital visits by MCG physicians; preventive check-ups; immunization and allergy treatments; ambulatory X-ray and laboratory services; all specialty consultations; pre- and post-natal and pre- and post-surgical care; out-patient psychiatric treatment when the patient is referred by MCG physician; rehabilitation evaluation and short term treatment.

Dental care and refractions are excluded as is cosmetic surgery, unless the need for such surgery arose from an accident or is necessary for the psychiatric rehabilitation of a child.

## SELECTION OF PATIENTS AND CONTROLS: ENROLLMENT

Employees from three companies were offered the MCG plan. Each of the companies provided a basic health and hospital plan for their employees, some portion of which was carried by the Metropolitan Life Insurance Company. The first company was Metropolitan Life Insurance Company itself, which offered the plan to its local employees in St. Louis; the second was General Motors Corporation, which offered the plan to its St. Louis hourly workers as an additional option for health care under their United Auto Workers contract; and the third was the Monsanto Chemical Company. Enrollment procedures varied among the companies. In the case of the Metropolitan Life Insurance Company, the campaign was conducted through the district offices by the district managers, who were given detailed information about the MCG plan prior to the enrollment. Each district supervisor or his designee visited the MCG offices as part of the learning process; sessions were held by Metropolitan group health personnel at the local Metropolitan offices as well. When enrollment was begun, the employees offered the plan were told that only 100 families would be selected. Over 200 indicated a desire to join the plan and names of 100 study families were drawn by lot to select the first members. The remaining employees who enrolled in the plan were asked to serve as the control group for the Metropolitan employees who now were study patients. In the case of General Motors, the company and the local union leaders offered the plan to their individual chapter members without a marketing or sales campaign, by posting a bulletin board notice. Only 50 families enrolled, and therefore no control group is yet available for this group of patients. In the case of Monsanto Chemical Company, the personnel managers of the various district offices visited MCG, were given the information about MCG services, and they then conducted the enrollment in their own divisions. In this instance almost 600 people enrolled for 150 open places. As in the case of Metropolitan employees, a control group will be developed from the remaining enrolled persons not chosen to be MCG members in the lottery.

Only general comments can be made about the enrollment. In each case, interest in MCG appeared to be in direct proportion to the level of understanding of the plan gained at the informational meetings. For ethical reasons, neither the MCG administrative nor medical personnel were involved in the enrollment procedures.

Following enrollment, all family members become active MCG members at a subsequent prearranged starting date. The enrollment card itself serves to initiate the MCG record. Family membership and other demographic and identifying data are transferred directly from copies of enrollment cards to the patient's plastic ID card and to his medical record. Enrollment is kept up-to-date by monthly notice from the insurance company. If enrollees discontinue the plan or transfer to another area, their health insurance reverts from the MCG plan to the basic plan as it was before MCG was initiated. MCG remains responsible for the care of members who discontinue enrollment, until 48 hours after such time as notice is received at MCG of the fact that the employee has discontinued coverage. Several of the initial enrollees discontinued the plan shortly after enrollment. In most of such instances the enrollee had not realized he would have to give up a relationship to his own physician at the time he became an MCG member. This was particularly likely to result in discontinuance if the patient was undergoing psychiatric treatment and had a productive relationship with his psychiatrist. Only in one or two instances was the patient dissatisfied with MCG as he found it.

## EVALUATION OF THE MEDICAL CARE PROCESS

The evaluation of medical care utilization is a major aim of the MCG program, and a specific system has been set up to allow retrieval of the desired information. For each patient encounter, the physician, or in the case of non-physician services, the nurse, fills out an events form indicating the services and procedures given the patient and these then are transcribed to a standardized record form (a code sheet for medical services and diagnoses), and classified according to a 28-part coding system (Table 1). Diagnoses are coded according to the International Classification of Diseases, procedures are coded according to the California Relative Value Scale, and the physicians' names are entered. For each service the standard fee also is entered. In the case of MCG-rendered services these are the charges MCG would have made for its services if it were a fee-for-service practice. In the case of X-ray, laboratory or consultative services the actual fees charged to MCG are entered. The recording forms are submitted monthly for computer storage and analysis, and desired information is generated at quarterly intervals.

In contrast to MCG office visits, accurate recording of patient visits to consultants has presented certain problems. A simple MCG consultation form provides good access to information about the first contact with a consultant, and is returned promptly to MCG by the consultant. But information from subsequent visits to those consultants has not been readily available to MCG. Such data now are being collected weekly by a research assistant by telephone. At the present level of operation of MCG, this has been an effective technique, but this only will be so in a small operation; other possible solutions to this problem are under study at this time. Hospital utilization data from study and control groups are available from Metropolitan Life Insurance Company for patients who carry a Metropolitan hospital insurance plan. Where another carrier has the hospital plan, such data are obtained from hospital records.

A checklist medical history has been adapted from one in use at the Ogden Clinic, Ogden, Utah, for submission to patients before they come to the MCG offices for screening examinations. A schedule for examining social and behavioral factors and attitudes of enrollees also has been developed but is not yet available in printed form. This questionnaire was reviewed by Drs. Odin Anderson and Merwyn Greenlick and then was modified, pretested and shortened. The schedule will be used both with study and control patients to provide data which can be the basis for future research.

## MEASURES OF OUTCOME

The measurement of outcome is the most difficult and problematical aspect of the MCG program. Two approaches are being tried. For evaluation of the medical care given in MCG itself, an audit system applicable to office records has been developed based on "acceptable local standards."(2) This audit system has just been initiated, and it is too early to tell whether or not it will be effective or how much it will have to be modified. But it is hoped that regular estimation of performance against pre-set standards will provide a measure of the level of medical practice of the physicians in the group. It is not certain whether or not it will be possible to apply the same audit to control patients' records. Some private physicians may be willing to have records audited, but many will not make their records available to us for study.

A key aspect of the evaluation of MCG is the knowledge that comparable control families will be available for each enrolled group. The screening examinations will permit an estimate of the degree of comparability of study and control patients and will allow reasonable determination of health status in the two groups. Data from the screening examinations also are coded for storage and retrieval, using a sample form which indicates the presence or absence of abnormality. This should make it possible to interpret on factual grounds any similarities or differences found in hospital and medical care utilization.

## IDENTIFICATION OF COSTS

The MCG accounting system is that used for research grants accounting in the medical school. Budget estimates are made in specific categories and code numbers are assigned for billing and record purposes according to projected needs in each category of service, such as consultations, laboratory and X-ray. Payments received from the insurance company for covered families are deposited in the MCG account, and payments and transfers are made either to other medical school accounts or to other providers of services or suppliers by voucher, each of which indicates the appropriate information for accounting purposes. Thus, when a patient is seen in consultation the amount of the consultation fee is transferred from the MCG account to the departmental fund of the consultant involved. Receipts and expenditures in each category will be available at regular intervals.

The method for coding fees supplements and extends this system. As described earlier, when the patient is seen in the MCG office the record form shows not only the service rendered, the diagnoses made and the payments made by MCG for services rendered by others, but a fee also is entered for MCG services as though MCG were a standard fee-for-service practice. The actual costs of medical care will be compared to those which would have been obtained if practice were completely on a fee-for-service basis. With this data available it should be possible to calculate the volume of operation and level of hospital savings which will be necessary for MCG to be solvent. In this regard it is important to note that MCG's start-up costs are known and that all costs relating to the practice operation are kept separate from those of the research effort. Thus, office rental, phones, salaries, supplies and other incidental expenses related to the practice itself are and can be computed as operational costs.

## RESEARCH AND TEACHING

Research is the basic responsibility of the Division of Health Care Research which is operating MCG and therefore is an integral part of MCG as already outlined. A broader research program in ambulatory care also is underway in the Division. Specific research projects in organization of rural health care, application of allied health personnel to medical care problems, sociologic and planning studies in community medicine and others are underway. The research personnel in the unit represent the disciplines of Social Work, Sociology, Economics, Communication and Medicine. Each member of the Division holds an appointment in a parent university or medical school department and an Associateship in the Division, and has teaching responsibilities in his basic department. The research unit, therefore, is closely related to the medical care plan, the university, the medical school, and the hospital.

The Division also is responsible for teaching of the comprehensive and social aspects of medical care and medical care organization. We therefore plan to make MCG an integral part of our teaching program. Seminars and research electives in health care now are offered by the Division. An elective titled "Clinical Preceptorship in Medical Practice" has been added for the coming academic year, in which senior students will practice for six to twelve weeks in the private offices of the physicians who staff MCG. After the details and techniques of this elective are worked out, we plan to offer the same opportunity in MCG with the same physicians. Other teaching efforts also are planned.

## FINAL COMMENTS

We believe that it is important to develop programs like MCG within the medical center, both to test possible improved methods for delivery and financing of medical care and to provide within the center a basic program for teaching of medical care. We hope this kind of unit will be a valuable laboratory for the study of medical care, and a meeting ground for clinical practitioners and academic physicians in the area of comprehensive medical care. Further, we hope the data we obtain will allow us to develop functional plans for ambulatory care of indigent patients within our medical center. Our initial experiences make us optimistic that our stated goals can be achieved.

## REFERENCES

1. Report of the National Advisory Commission on Health Manpower. Volume II. Appendix IV. The Kaiser Foundation Medical Care Program, Washington, D.C. Commission on Health Manpower, 1967.
2. Donabedian, A. A Guide to Medical Care Administration. Volume II. Medical Care Appraisal - Quality and Utilization. The American Public Health Association, 1969.

Table 1

TYPES OF SERVICE CODES

| | |
|---|---|
| Surgery | 1 |
| Medical in Hospital (non-psychiatric) | 2 |
| Immunization | 3 |
| Anesthesia | 4 |
| Night and Weekend Emergency | 5 |
| Diagnostic X-ray | 6 |
| Radiation Therapy | 7 |
| Diagnostic Laboratory | 8 |
| Consultation - Surgical | 9 |
| Surgical Assistant | 10 |
| Psychiatric - First 5 Visits | 11 |
| Psychiatric - 6th and Subsequent Visits | 12 |
| Consultation - Medical (non-psychiatric) | 13 |
| Medical in Office - First Visit | 14 |
| Medical in Office - Subsequent Visits | 15 |
| Medical in Office - Preventive | 16 |
| Rehabilitation | 17 |
| Medical - Screening | 18 |
| X-Ray - Screening | 19 |
| Laboratory - Screening | 20 |
| EKG - Screening | 21 |
| Gynecology - First Visit | 22 |
| Gynecology - Subsequent Visits | 23 |
| Obstetrical - First Visit | 24 |
| Obstetrical - Subsequent Visits | 25 |
| Postpartum | 26 |
| EKG - Diagnostic | 27 |
| Office Procedures | 28 |

# A TRIAL METHOD FOR COMBINED END RESULT AND PROCESS EVALUATION OF HEALTH SERVICE SYSTEMS

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With the establishment of the California Center for Health Service Research at UCLA, campus-wide interest was stimulated in the development of experimental models of health service systems designed to realize the fullest potentialities of modern medical technology in promoting health. Three such models have been conceived and are presently being pressed toward implementation.

*Model One: A Child Health Care Prepayment Plan for Children of Students at UCLA* - This model was developed as a pilot program in direct service prepayment. Through the Department of Pediatrics and the Marion Davies Clinic for Children, nearly comprehensive health services for the children of students are being offered on a contractual prepayment basis. Care under this plan will commence effective April 6, 1970. It is expected that initial enrollment of approximately 400 children will grow to an enrollment of 2,000 children in the fall of 1971. By that time it is anticipated that provisions will have been made for prepaid health care services for the spouses of married students as well, and that a comprehensive student-family health service potentiality on the UCLA campus will have been created. The evaluative techniques developed under this research proposal will be applied in the evaluation of this prepayment model. In addition, if it is necessary, the model may be used as a laboratory in the development of the techniques themselves.

The Regents of the University of California took formal action in February, 1970, authorizing the President of the University to approve the proposed Child Health Care Plan. In doing so, the Regents acknowledged the principle of contractual direct service prepayment relationships as one of the acceptable alternative paths for the financing and operation of teaching hospitals associated with the University of California and its schools of medicine.

*Model Two: Extension of the University Resources to Augment the Primary Health Care Resources of Certain Areas Deficient in Primary Care* - UCLA Hospitals and Clinics and the School of Medicine have been involved with an increasing intensity in the planning of a program to augment the primary health care services available in the South Santa Monica, Ocean Park, and Venice areas of Los Angeles County. These areas represent concentration of low income families and welfare recipients. The primary health care resources are notably deficient. In cooperation with the Los Angeles County Health Department and the Los Angeles County Department of Hospitals, efforts are presently underway to formalize the development of community health resources in the West Los Angeles area to meet the deficiencies in primary care in these specific areas. UCLA has agreed to provide medical staff, specialist backup, and hospital facilities support for the development of a comprehensive health care clinic by the Los Angeles County agencies concerned with health. In order to finance the development of such a model program, the concept of contractual prepayment for categorical aid recipients under Title XIX (MediCal) is being developed. It is expected that County Health Department services on a comprehensive care model will commence in the South Santa Monica area in May of 1970. Because of the potential use of prepayment as a mechanism for financing care in these new primary care involvements, this model also provides a laboratory in which the population at risk will be known in advance. The model, therefore, will also be capable of serving as a laboratory within which some or all of the research proposed may be carried out.

*Model Three: A University-Community Health Service Prepayment Plan*

A prepaid health care program is to be offered on a voluntary enrollment basis to university faculty and staff and to others in the university community who wish to identify themselves with the UCLA Center for Health Sciences as their principal source of health care should they become ill. Enrollment for this plan is to be conducted by Blue Cross and Blue Shield both on the UCLA campus and in the outside community. To serve enrolled members, a new family health care center will be developed as a separate health care entity.

The initial enrollment from the UCLA faculty and staff potential of 30,000 persons is expected to be approximately 4,000 persons. Blue Cross and Blue Shield marketing commitments are for the development of approximately 700 persons per month additional membership during the first year and 1,000 persons per month additional membership during each of the succeeding two years. Enrollment is expected to reach 36,000 persons in November of 1973.

The Family Health Care Center will be staffed by 21 primary physicians (internists, pediatricians, and specialists in family practice) and the necessary supporting specialists and staff. At full operation, a complement of psychiatric resources, full-time surgical consultation, and obstetrical and gynecological consultation and services will be directly available at the Family Health Care Center. Other specialty service and inpatient care will be provided through the extensive resources of the Center for Health Sciences. The Family Health Care Plan has been conceived not only as a model program to create the ideal setting for the physician-patient relationship in an organized context, but it has also been planned as a laboratory. The subdivision of the 21 primary physicians into three teams of seven physicians each; the fact that each serves its selected population on a continuing and responsible basis, that each team serves the entire family unit, and that members are free not only to select the team that will serve them, but to change teams in the event of dissatisfaction, creates a setting within which considerable controlled experimentation may be done with respect to the organization of health services. Changes in staffing patterns, hours of operation, methods of handling patients, applications of new technology, etc., may be tested under conditions using the other similar teams and their populations as controls. It is believed that as many as six simultaneous experiments relative to the organization and delivery of health services may be carried out within this one setting simultaneously without confusion of results. In order to develop and use this laboratory in this way, however, it is imperative that baseline performance data be collected and that the criteria for outcome be developed.

## THE EVALUATION DESIGN

In planning the evaluation research for these programs, there have been two basic goals:

- an adequate assessment of the end results of the medical care program;
- development of a general methodology for the measurement of process problems in such programs.

If the model to be tested is valid, it should be possible to measure program effectiveness for the current program while testing the model.

*The Development of a Model:* Evaluation of health service programs or systems has followed three forms. Donabedian[1] classifies these forms as appraisal of structure, assessment of process, and assessment of outcomes. The bulk of formal efforts at the evaluation of health service systems or components has been placed on appraisal of structure in the form of certification and accreditation processes. It has been noted that such appraisal of the presumed capability of a system to perform effectively does not directly measure its actual performance.[1,2,3,4,5]

Assessment of process, the direct or indirect observation of the transactions occurring within a health service system or program, is a more proximal measure of the actual performance of a health service system. But as Donabedian has noted, process evaluation is dependent upon comparison of the observed performance with a model of "good" or another observation set. Invariably, however, that which is observed in process evaluation is determined by an assumed relationship between "good process" and successful health outcomes or end results. Health service process evaluation is presently an expanding field. The landmark developments by Peterson,[6] Lembcke,[7] and Morehead and Associates[8,9,10,11] have opened up the enormous potentialities of observation of the physician-patient interaction process and the possibility of drawing evaluative conclusions about the technical quality of these interactions. It may be noted, however, that process evaluation has almost exclusively been limited to the single dimension of technical quality in health service programs. In the last two decades, increasing attention has been given to the multiple dimensions of quality in medical care. In calling attention to such dimensions of quality as accessibility, acceptability, continuity, coordination, comprehensiveness, and efficiency, the Program Area Committee on Medical Care Administration of the American Public Health Association (a Guide to Medical Care Administration, Vol. I) has cited the importance of a broader concept of medical care process.[12]

Process evaluation as it has been developed thus far has tended to have two major problems:

- It has focused upon medical care process within the professional sphere of activity to the exclusion of those process problems or failures which occur outside the walls of the institution. This problem has resulted from: (1) the predominant use of the medical record as a source of information; and (2) a tendency to define the health service system only in terms of the professional components thereof. The analyses by Parsons (The Social System)[13] and Freidson (Patient's Views of Medical Practice)[14] lead clearly to the conclusion that any definition of the health service system must include the population at risk. Both sociologists clearly support the premise that family and friends serve as the first validation and intervention screen of the health service system.
- The inability of the usual institution, representative of the dominant medical care system in the United States, to identify its "population at risk." Diffuse relationship patterns, in which an individual is not identified with any specific service component until such time as the need for that component arises, make it impossible to identify segments of the health service system external to the professional setting until such time as the need for care has been defined by the patient, and professional care is sought. The existence of longitudinal contractual relationships between the population to be served and the professional components of the health service system through direct service prepayment relationships introduces the opportunity to extend health service process observations well beyond the realm of the in-house professional performance.

The multidimensionality of process qualities leads to a further problem in health service process evaluation. The relative importance of process failures in accessibility or acceptability compared to process failures in technical quality can best be judged in terms of the degree to which those problems or failures tend to have an impact upon the health of the population to be served.

Assessment of outcomes has followed four dominant paths, each representing only a single dimension or fragmentary approach to estimation of the efficiency of effectiveness of health service systems or programs.

- A number of studies have focused on the outcomes of intermediate processes.[15,16,17,18]
- Specific programs have been evaluated in terms of costs related to effectiveness. In such programs the population at risk is defined as an entire community and changes in the community level of the disease at which this specific program is aimed are the outcome criteria.
- The outstanding works of Densen, Shapiro and others in examining perinatal and maternal mortality,[19,20,21,22,23,24] general mortality within an indigent population,[25,26] and morbidity data[27] as outcomes, are an example of the third form of assessment of outcomes. In such studies the ability of programs to define accurately and prospectively the population at risk has allowed the observers to determine comparatively the impact of the organization and its efforts upon certain aspects of the health problem.
- The fourth dimension of outcomes assessment which has been frequently applied (though with questionable effectiveness) is cost assessment. Under the implicit assumption that health status outcomes are comparable, the costs of two programs have frequently been used to make judgments about policy. The limitations of this reasoning need not be labored here.

End results measurement has been slow to develop as a tool for evaluation of specific subsystems of the health service industry. Physicians have been reluctant to be judged on the basis of the outcome of any specific case or any set of cases. They recognize realistically that the best medical practice is predicated upon probabilities of outcome which are always uncertain at the medical practice level. In addition, outcome evaluation hinges on the ability to attribute good or bad outcome to the performance of a specific health service provider or provider system. While outcome evaluation has been applied in terms of the mortality and morbidity of a given community, and comparative judgments made between the performance of service systems in different communities, the absence of any community-level health service management and the usual inability to attribute responsibility to subsystems within the community have made it unlikely that outcome evaluation in terms of mortality and morbidity could be usefully brought to bear on the diffuse and informally organized dominant medical practice community. Nevertheless, the growth, on the American scene, of organized medical practice entities, the gradual appearance of organizations which could be identified as health service "firms," the growth of patterns of contractual direct service prepayment relationships between health service firms and their populations at risk and the pressing national need for discovery of organizational patterns yielding effective and efficient health service have now created a favorable environment within which to further explore assessment of outcomes.

This paper suggests an approach which combines the measurement of effect on health status with process problems analysis. It is hoped that the combined approach will yield not only a new set of measures of the comparative effect of different health service enterprises, but also a new set of management information. Quantitative and qualitative analysis of the ways in which the system has failed to live up to the expected ideal will provide management with a new kind of tool for decision making. Both Shapiro and Donabedian have noted the "need to include both process and end results in systems of continuous or repeated appraisal" of health service systems. In the proposed research, simultaneous efforts will be made to quantify the multiple attributes of health service process, and the end results of that process.

The proposed research rests upon a view of the health service system as "an agency of social control." It is seen as a formal control system dealing with the "deviant state" of illness in the same sense that the education system deals with the deviant state of ignorance or that the law and its agents deal with the deviant state of criminality. The theories expressed by Talcott Parsons (The Social System, etc.) give rise to this formulation and suggest two solutions for critical problems at this time.

First, it provides a firm footing to establish an overriding social concern for the performance of the health service system. This creates the opportunity to support the replacement of market demand criteria with other criteria for allocation of scarce health resources.[28] The application of cost-effectiveness studies at the system level then becomes more practical. It is a principal tenet of this paper that the operational goal of the ideal health service system is control over the health impairment burden.

Second, Parsons' formulations call attention to the important function of "family and friends" as the first referral screen of the health service system. Freidson's research demonstrates the utility of this concept and the implications of the theory for the organization of health care. This research proposal is based upon a view of the health service system as four concentric rings representing from the center out, institutional care, specialist care, primary professional care, and the arena of family and friends as a first source of validation of illness and referral to appropriate action.

The overwhelming tendency of past evaluation efforts has been to view the health service system as limited to the professional arena. Family and friends are external and are seen as potential patients and as influences, but seldom as parts of the system. When one considers each ring of the system as a screening mechanism which should keep the service involvement at the lowest competent level, the importance of the knowledge and function of family and friends becomes clear.

The estimating of health impairment for the study population is the first research task. It will be approached from several directions in order to achieve accuracy in the estimation of validity, reliability and sensitivity. Although one estimate of health impairment might be obtained from the examination of medical records this procedure would assume that almost all health impairment came to the attention of the medical care system which is probably not the case. Thus it is imperative to gather data directly from the population. A thorough assessment of health impairment of one case will require the combination of intensive interviewing, observation and review of the medical record. One task of this research effort will be to determine a format for obtaining such data which is within the grasp of an ongoing medical care program. This requires, first, the development of a feasible interview instrument and second, it requires an analysis of that interview data compared to medical record data in an effort to identify segments of data which can in the future be taken from the management information system.

It is understood that the concept of health impairment itself holds several possible pitfalls. The impairment experienced by different individuals having the same medical problem may differ greatly as a product of that individual's normal roles and functions. That is, a young receptionist may suffer more objective as well as subjective impairment from a facial scar while waiting for plastic surgery than will a middle-aged male manual laborer. It is also true that impairment may be experienced differentially in different spheres of an individual's life. Thus, it is important to assess impairment not only in the ability to function normally at work, but also to function in other social roles. These measurement problems may be handled through the effective combination of medical evaluation of impairment and individual evaluations of impairment made by respondents.

The second critical concern of this research must be assessment of attributability of health impairment burden to the medical care system. Again, this will be accomplished through a combination of technical approaches. It will be necessary to thoroughly define and establish the criteria by which impairment is judged to have been avoidable, reducible, the result of the health service system, or appropriately attributable as an incentive for further concern.

To a certain degree attributability may be inferred from the relationship between process problems and outcomes of the medical care system. The identification of process problems again requires the application of at least two techniques. Some process problems will be identifiable only from examination of the records while some process problems will only be apparent from the testimony of respondents. An additional set of process problems may be suggested by the existence of conflicting perceptions between respondents and records.

*Method of Procedure:* The design of a study based on the foregoing objectives requires a multi-method approach. The methodology to be developed in this research will combine three basic components: a longitudinal interview survey of a sample of program members and of samples from control populations; an examination of medical records supplemented by a subsample of physical examinations; and a laboratory study in which controlled experiments with alternative program styles can be performed. This component will require the application of observation, interviewing, and other related research techniques.

*The Health Service Process Problems Study:* The use of "Problems" as management guides and stimuli is ubiquitous. Problems are observed (or perceived) deviations from some "ideal" concept. Problems, where they can be noted and interpreted properly, are our most useful guide for achieving or approaching the ideal. The use of "problems" in health care process as guides to approaching an "ideal" process is neither new nor startling, but the proposed attempt 1) to study health service process in the context of a system defined as broadly as it is herein, and 2) to use the classification and frequency of problems as the basis for a "universal" measure of performance has not been tried. This proposal hypothesizes that there is a common ground between all observed defects in health service process (process problems). These process problems can be translated into a single unit of measure in terms of impact on the health status of the individuals involved. By translating process problems in accessibility, those derived from coordination, and those resulting from improper medical judgment into estimated man-day equivalents of impairment and by estimating the total frequency of each class of such problems in the total performance of a health service system, a number of useful purposes are served. Management can gain information on the specific areas within which the performance of the system is deficient. Given limited resources, rational decisions can be made between alternative organizational changes which may be expected to relate directly to the effectiveness of the organization. Trade-offs such as between decentralization (increased accessibility) and coordination (a function of spatial contiguity) can be more accurately estimated. Additionally, the ability to estimate accurately the numbers of medical care process problems of a significant type and their aggregate impact upon the health of the population to be served promises to yield an evaluative tool of considerable importance.

The organization and management of personal health service systems presents problems not common to industrial management. The health service system is engaged in the production of a custom made product for each consumer. It does not have a homogeneous or standardized output. Each person who defines himself as ill is a single problem for impairment control drawn from a finite but vast set of manifestations, etiologies, and appropriate therapies. The paths[29] appropriate for diagnosis and management of care are too numerous to anticipate. Each medical management case is unique or almost unique. It is a complex of personal, social, technical and biological interactions.

The work of the Program Area Committee on Medical Care Administration of the APHA in classifying medical care process characteristics associated (presumptively or demonstrably) with good medical care has attracted attention to the deficiencies of evaluative systems based principally upon appraisal of technical quality. The intervening variables in accessibility, acceptability, continuity, coordination, comprehensiveness, purposiveness, and efficiency may result in gross loss of social effect even where the technical quality of care is high. Medical teaching centers operating in the heart of deprived areas are often examples of such a paradox.

Medical care process has been discussed by many observers. Ideally, the process can be described as follows, at least in terms of the system's predominant function of illness control:

1. Individuals in the population take the illness role only when it seems necessary to do so—they must be free to take the role when necessary and they avoid taking the role when there are other methods of behavior possible. Illness is both socially functional as a "cop out" mechanism and socially dysfunctional as a disruptive factor. The discrimination between appropriate referral to professional care and inappropriate referral depends upon knowledge.
2. Individuals are capable of making appropriate judgment about the proper course of behavior for various illness states or for general health maintenance. At appropriate times, the ill individual himself will choose to seek professional care. In the absence of appropriate judgment by the individual, family and friends will refer appropriately to the professional system.
3. There will be no psychological, social, or physical deterrents to appropriate use of professional health care (availability and accessibility).
4. When the ill individual seeks professional care, the relationship should be one of mutual acceptability for both the patient and the

professionals. Role expectations should not be breached in the process to the extent that patient-healer confidence is lost.

5. The professional conduct of the healer should conform to standards of excellence developed under the criteria of science and humanism.
6. The full range of specialized resources appropriate for dealing with the patient's needs will be brought to bear in an efficient manner and coordinated for the maximum effectiveness. The criterion of effective care is the return of the patient to optimum health as rapidly as possible.
7. The patient relinquishes the illness role insofar as he is able as soon as he is able.

It is proposed that the medical care process problems study will extend the process observations to those persons who do not enter the professional health service system as patients. An analysis will be made of the ability and performance of that part of the system to make proper judgments and to relate functionally with the professionals. Knowledge about appropriate health practice and care seeking will be viewed as a function of the health care system.

In addition to this extension of the concept of system, our observations will be extended to those who withdraw from the system (or from treatment) in order to locate process problems which may have prompted or been associated with such withdrawal. A patient, for example, who is advised to obtain dental service (not provided by the referring professional) may, from that time on, be lost to the record. Failure to get the needed care might lead to illness or disability treated outside the system after termination of membership. Without concerted effort to identify and quantify such process problems, there is little basis for appraising the effect of deficiencies in comprehensiveness, continuity, or coordination.

*The Aggregate Health Impairment Burden Study:* For the purposes of establishing a basis for outcome evaluation, the objectives of the health service system are deemed to be predominantly the exercise of control over the health impairment burden in the population. The health service system has other functions, as for instance the rendering of support, care and comfort in the normal process of childbirth and the validation of states of ill-health or wellness for insurance purposes, etc. Nevertheless, it is assumed that the predominant function of the health service system is in preventing, diagnosing, treating, rehabilitating from and mobilizing resources against actual and potential incidents of disease or sources of health impairment in the population at risk. The concept of aggregate health impairment includes all of those incidents of socially dysfunctional illness, pain, physical or mental impairment or incapacity which are health related. One goal of our research will be to develop methods for refined discrimination between socially functional use of the illness role as a "cop out" and the socially dysfunctional impairment which causes use of the illness role.

The urgency of exploring all promising avenues of end result measurement is stressed by Shapiro when he states:

> The desirability of determining quality of medical care by its effect on some measurable aspect of health is matched by the pessimism among researchers about the possibility of dealing with the issue. A reversal in this outlook seems essential today in view of the need to assess the meaning of the enormous changes in organization, financing and accessibility of medical services that are just beginning to emerge.[5]

It is noteworthy that aggregate health impairment measures for the performance of comprehensive health service systems have not been systematically explored, even though they promise substantial advantage. The use of mortality data as a measure of outcome for health service systems has been found to be relatively unsatisfactory. Except with the very young or with population segments especially at risk, e.g. pregnant women, mortality rates are not sufficiently sensitive to use as a basis for management. The relatively low incidence of death in most populations, even those receiving poor health care, makes it necessary that large populations be observed over long periods of time before the statistical credibility of the observed pattern can be established. The use of incidence or prevalence of selected disease categories is also problematic. These usually fail to give reliable indication of the general functional performance of the system and, due to low incidence, are subject to the same limitations as mortality data. In the search for an end result criterion which will be valid, reliable, and sensitive, the concept of an aggregate measure of health impairment incidents observed within a population is attractive–perhaps beguiling.

Chiang,[30] Sullivan,[31] and Sanders,[32,33] have noted the utility of health impairment indexes. Shapiro notes with Sanders, the problem of using gross health impairment based upon incidence. In an age when the miracles of modern medicine are increasing our ability to define people as ill while they are still able otherwise to function, it is natural that better health service may increase the incidence of "illness." Refinement of the measure to embrace severity and duration of impairment will tend to overcome this problem. If there is any truth to our belief that prompt diagnosis and treatment will reduce disability, then a measure of severity and duration of impairment should be sensitive to variations in the qualities of the health service system. Explorations in this field by Bush and Fanshel[34] seem promising.

One further refinement of the measure of health impairment offers promise of improving the sensitivity of the measure as an evaluative tool. If it were possible to eliminate those portions of the health impairment burden over which the health service system could have no control, the residual health impairment measure would reflect those episodes which could presumptively, or hopefully, be affected by the health service program. Our research efforts in evaluation will seek to explore the usefulness of deveoping an aggregate measure of the health impairment in the population at risk. Through careful sampling techniques and the use of control populations experiencing health services in alternative health service settings, it is proposed that an attempt be made to translate all observable incidents of health impairment into an aggregate figure expressing incidence, severity, and attributability in terms of man-day equivalents of disability.

As an example of the process of assessing attributable (chargeable) health impairment in an individual case, let us take a person in the sample population who contracted venereal disease resulting (due to reinfection and other complications) in 37 days of health impairment before control was finally achieved. If it were estimated that for five days he was 30 percent impaired and for the balance of 32 days he was 10 percent impaired, a severity corrected impairment score of 4.7 man-days of impairment would result:

$$[(5 \text{ x } .3) + (32 \text{ x } .1) = 4.7]$$

If it were further judged, in this case, that for the first exposure of five days' impairment, 20 percent of the impairment was chargeable and that for the balance of the time 50 percent of impairment was chargeable due to failure of the system to involve itself with the patient's contact, the 4.7 man-days of impairment would be multiplied by a factor of

$$\left(\frac{5}{37} \text{ x } .2\right) + \left(\frac{32}{37} \text{ x } .5\right) = \frac{17}{37} = .46$$

The chargeable health impairment units in this specific case would be 4.7 x .46 = 2.16 CHIMPUs (chargeable health impairment units).

Such an approach allows for translation of the complete range of kinds of cases a health service system would be dealing with into a single uniform measure which might be standardized and applied in other health service systems for comparable data.

The CHIMPU is not a measure of effect; it is a measure of the aggregate problem not controlled. A measure of effect could be derived by substracting the aggregate or mean CHIMPU score from some standard estimate of CHIMPUs expected in the absence of any health service (or from past performance levels). This yields an estimate of net increase or decrease in CHIMPUs for the current period.

*Methodological Concerns:* The absence of prior research in aggregate health impairment measurement or in health service process as here conceived makes this proposed research essentially exploratory. A number of questions in End Result Measurement and Process Measurement are answerable only in theory until concrete data are generated:

Can health impairment burden be measured? Can health impairment burden be demonstrated to be a valid measure of program outcome? Can the portion of health impairment which is equitably attributable to the medical care system be estimated? Can the processes of the program be observed and process problems be identified, counted, and weighted? Can the study population be effectively compared with other medical care delivery systems?

Data for both the health impairment study and the health service process problems study will be gathered at the same time when appropriate. Also, the first two research components will be employed simultaneously. Data from each component is self-contained and can be analyzed alone. However, a data set will be assembled combining the data gathered by both methods. Subsequently, the laboratory component will be used for in-depth experimental treatment of process problems suggested by the data. It will also be used to initiate independent experiments with program structure alternatives. In the following paragraphs, each of the major research components is outlined, beginning with a description of the sample on which components one and two are based.

*The Sample:* A random sample of 800 persons stratified by age, sex, and socioeconomic status will be selected from the population of those who enroll in the medical care program. From this sample a subsample of 100 cases will be selected for intensive study including a physical examination. (In subsequent panels, this 100 case subsample will be selected from those persons who have not received services since the last interview.) Retrospective data will be collected on the past medical care process and on health status. All respondents will be interviewed every six months for five years. Data from patient records will be gathered concomitantly with interviews. The sample size will insure that a large number of respondents can be retained for analysis over the five years. To compensate for that attrition which will occur, continuous replacement will be employed. The original sample size and composition will be maintained by selecting new cases from the new enrollees. In this manner, the final sample will include 800 cases who have all been followed through the duration of their membership, though that membership may not extend the full five years.

*Control A: Comparative medical care process data from a system dissimilar to the principal program.* Comparable health service process data will be developed on a sample of 400 cases who were eligible for the study program but who chose the Blue Cross alternative program. These cases will also be interviewed semi-annually for five years. Continuous replacement will be applied to maintain a 400 case base. The same interview schedule will be used as in the principal longitudinal sample.

*Control B: Comparative data on health status from a similar system.* A random sample of 160 cases will be drawn (stratifying again by age, sex and socioeconomic status) from new enrollees in a medical care system similar to the principal program. The comparative system must be similar in two respects: 1) the population at risk must be definable and comparable to the principal program population and 2) the medical care plan should be basically the same, a pre-payment plan with voluntary enrollment. Health status data will be gathered annually through interviews and examination of records. Continuous replacement with new enrollees will compensate for attrition. This sample may be modified to meet needs dictated by preliminary data analyses. Process data will not be sought on this sample unless the medical care plan requests that we do so.

*Control C: Effects of measurement.* Each six months a new sample of 100 program members will be selected without replacement to be measured at the same time as the longitudinal sample is measured. The objective in this control mechanism is to separate out the effects of repeated measurement for the continuing respondents.

*Control D: Data on bias in selection of population at risk in the study program.* This last type of control will be provided by secondary analysis of university records and by comparative analysis of the descriptive data on the sample of eligible non-members described in Control A.

*The Interview:* As mentioned, the interview will provide data relating both to health status and to medical care process. Essentially four areas are outlined in the basic interview schedule as it will be applied to the principal program sample and to the longitudinal sample of eligible non-members. A shorter interview related to health status will be organized for administration to control group B. A partial outline for the larger interview schedule appears below—the delineation of specific items to be included in the research instruments is itself considered to be a major part of the research effort. Items include:

I. Background Data—Identifying Data, Socio-Demographic Information, General Attitudes Toward Medicine and Health Care, and Attitudes Towards Past Health Service System. These areas will be primarily covered in the initial interview although changes in attitude toward organized practice, preventive medicine, etc., overtime must be measured and would be important. Also it would of course be important to note changes in family, education, etc. A patient's general attitude toward the system influences the whole way in which he relates to the system in each incident. Thus, if he feels generally negative, he may not seek help and a deviation from the ideal process will be noted.

The medical care system may function more or less well for members with differing socio-demographic characteristics and attitudes toward medicine. It is, of course, necessary to provide adequately for the control of such conditioning variables. The initial enrollment in the program may itself be affected by whether a person has chronic medical problems, a large family, financial problems, and the like. It will obviously be influenced by whether a person is satisfied with his present provisions for medical care and whether he is positively disposed to group practice. Once in the program, the member's attitudes will modify his experience in the program. In addition to knowing how a patient's attitudes affect his experience, it is imperative to know if the program itself is structured to the advantage or disadvantage of members with specific attitudes and characteristics. For example, if all members with certain ethnic or age characteristics were dissatisfied, the program structure should be questioned.

II. Recent Health Impairment Levels–includes respondent's recall of specific impairment over a number of weeks to be established in pretesting; respondent's recall of major impairments over the past six months; and respondent's perception of his current health status. Development of measures for the respondent's perception of extent of health impairment is a critical task in this research. As discussed in the previous section, a person may be more or less impaired by the same incident, depending upon his normal roles. Thus, measures must be developed to allow a respondent to assess his relative impairment with respect to the major spheres in which he functions. This may include his relative ability to maintain normal function in the family, school, work, social relationships, both formal informal.

III. Data on the Process by Which Medical Care is Administered and Received–includes action taken by respondent in response to each health impairment incident and reason given by respondent for taking the action, etc.

Although the respondent may not recognize some difficulty he has as the fault of the medical care system, there may be in fact a connection. For example, in a health care study in Atlanta, Georgia, it was found that 43 percent of the respondents worried about bothering the doctor. A patient might conceivably realize he let something get out of hand because he didn't want to bother the doctor. He might not see this as the fault of the system, but a system breakdown might, nevertheless, be occurring.

The interview schedule will be repeated every six months. Specific additions will be made as they are suggested by the development of the health care program. Should a great number of respondents raise a certain issue, that issue might be explored in the subsequent panel.

All interviewing will be done by a professional interviewing staff which matches the distribution of the patient population in age, sex, and socio-demographic characteristics. Interviewers will be selected who are not related to the health service system in any other capacity. The interviews will be about an hour in length and will be administered outside of the clinic setting.

Overall estimates of the health impairment level of the population will be made after each panel. Estimates will also be made as to incidence of certain types of failures to reduce or avoid impairment and of the incidence of certain classes of process problems. Working with a panel of medical experts, it should be possible to develop a set of criteria that, from the interview data alone, will allow detection of some failures or problems. For example, if the respondent cites inability to get an appointment as a reason for not getting to the clinic, this can automatically be counted as a process problem. From this type of data the point at which system breakdowns are occurring can be identified for further analysis. The interview in question would be paired with the clinical record and referred to the medical panel for analysis and classification of the problem.

*Secondary Data from Records:* Data to be gathered from the records will include a draft of data available from the management information system and a complete coding of other information from records belonging to sample cases and internal control cases.

Data will be gathered from both clinic and related hospital records in conjunction with each interview panel. All records for the 800 membership sample cases will be coded each six months at the time of the interview. The records of internal control cases will be coded only at the time that they are interviewed. It is probably not possible to do similar coding for non-membership cases although alternatives should be explored.

A coding scheme will be organized in the same manner as the interview schedule is organized. Each six month period, the record will be examined for specific information which would include, for example, for each incident length and amount of impairment associated with the incident, course of action prescribed, etc. Exact items of data to be coded will be delineated as the methodology is developed.

*Professional Pannel:* As coding proceeds, all cases in which process problems are possibly operating will be designated for special consideration in the review by the medical panel. The functions of the medical panel, which includes three physicians as well as other experts in the medical care process, will be to determine for each case in the sample: the degree of gross health impairment, the degree of attributable health impairment, presence or absence of health service process problems, classification of such problems, apparent cause of such process problems and health impairment associated with such problems.

A comparison of data gathered in this manner from secondary sources to data gathered through interviews, yields first of all an itemization of data which can be reliably gathered from secondary sources. From the above it is then also possible to obtain a second estimate of the level of impairment of the population. This estimate must be compared with that estimate derived from the interview data. The degree to which these estimates converge has obvious and far reaching implications for the remainder of the data analysis.

A comparison of the record data and the interview data on the simplest level will provide an estimate of the proportion of health impairment incidents which appropriately reach the attention of the medical care delivery system. From the records alone it is possible to judge the proportion of patients for whom the appropriate medical action was taken and for whom the appropriate follow-up occurred. Comparing the record data with interview data allows more sophisticated judgments with respect to the appropriateness of treatment in the population at risk. If the interview and the record usually agree on the level of success with which incidents are treated, direct estimates of the clinic's effectiveness might be made with some accuracy from the professional record alone. That is, we can estimate the average impairment suffered by the population, the percent of incidents in which the clinic was consulted, the responsiveness of the clinic, the cooperativeness of the patient and the success of treatment. Further, specific points at which the system is apparently prone to failure can be identified for further study.

When the case record and the interview conflict, that in itself may indicate a system breakdown of some nature. A specific problem may be suggested by the character of the disagreement. A more expert analysis of the records and interviews in question may point to the source of the system failure. However, it may be that an area for further research is indicated. The application of subsequent interview panels will be guided by such indications.

*The Laboratory:* The laboratory component can be used in many ways. Among its principal uses will be the follow-up of process problems or measurement problems which are identified in the preceding data gathering efforts. The content of the interaction process which seems to be creating a system breakdown may be better understood through direct observation or a related experimental technique. Through the design of specific experiments, it can be learned how the system responds to particular kinds of illnesses, patient personalities, age or sex categories which have been found to be associated with unsatisfactory outcomes.

Additional specification of laboratory research can only be done as preliminary data emerge from the management system and from the longitudinal study of patients.

*Analysis:* Two levels of analysis will be required in this research. First, some evaluation of the effectiveness of the principal program must be made. This involves the estimate of the impairment levels in the population at risk as they change overtime and as they compare to impairment levels in other populations. It also involves the incidence of process problems in the medical care system, and the relationship of process problems to health impairment outcomes.

The second level of analysis pertains to the evaluation of, and refinement of, this methodology. This analysis requires intensive and continuous interaction with the data. It is first of all necessary to test the validity, reliability, and sensitivity of health impairment burden as a measure of outcome. Second, the assessment must be made of the accuracy with which attributability can be measured. The criteria which emerge from the medical panel for assigning attributability must be tested for validity and practicality.

The project will require the continuous support of a coding and programming staff. All data will be coded for computer analysis and a system will be instituted whereby successive data analysis requests can be made. The computer facilities at the Health Sciences Computer Center will be used. A programmer will be employed who is specially trained in the application of multivariate statistical techniques.

Since this is an ongoing evaluative effort, it would be inappropriate to think of data analysis as the testing of a pre-determined statistical model. Relevant statistical techniques will be applied as the preliminary analysis dictates their desirability.

*The Significance of This Study:* The UCLA Center for Health Sciences has, along with many other University centers throughout the nation, experienced an increasing interest over the last five years in the problems of the delivery of health service. Excursions into regional medical programs, continuing education, and relations with comprehensive health planning endeavors have led to the realization that much of the technological capability of medicine is not being realized due to structural-organizational problems in the world of medical practice. Concurrently, changes in the nature of the population served and the teaching of health professionals have given rise to an awareness that centers such as ours must not only anticipate changes which are going to dominate the medical world of tomorrow, but that they must use their resources to provide the professional leadership necessary to assure that the changes which do occur are going to be favorable for society.

Stimulated by the creation of California Center for Health Services Research, the UCLA Research Program in the Organization of Health Service has made its resources available to the UCLA Hospitals and Clinics to assist in the planning and development of a number of model health care delivery programs. Each of these programs is conceptualized as a laboratory within which experimentation in the organization of health services can be undertaken to determine its effect upon health outcome and on the efficiency of the health service delivery system. The imperfect state of the art of health services evaluation, however, makes it imperative that, at the outset, a considerable thrust be made in order to develop the criteria for assessing the effects of the system. Both a multidimensional process evaluation technique and a practical end result measurement are imperative to the success of these laboratories in yielding definitive information on the effectiveness and efficiency of alternative health service patterns. Both the medical care process problems study and the aggregate health impairment study are believed to be the most likely methods by which the model programs can be definitively evaluated, and by which sufficient management information about health service process and program effectiveness can be generated to allow for fulfillment of the purposes of the program.

One major side-effect of the effort to develop an evaluative methodology will be the contribution of this study toward the development of a new approach to management information systems in health service delivery. The surveillance of health service process problems will provide, we believe, a radical new tool for health system managers.

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# PART II:

# AREAS OF EVALUATION

## PROBLEMS IN DEFINING TARGET POPULATION

**Jacob J. Feldman, Ph.D.**

By contrasting two rather disparate views of the responsibilities of the medical profession, the concept of a target population may be somewhat clarified.

- Medicine need be concerned only with those cases of disease and injury which are presented to physicians. The major objective is to provide the best treatment the present state of medical knowledge permits for those cases. This view tends to arise out of the pressures of day-to-day practice of medicine rather than from ideology. Many find the challenge of managing the morbidity which is brought before the profession sufficient to occupy their total attention. This is the traditional clinical view.
- Limited medical resources have to be so allocated as to maximize the welfare over the total population, even at the price of sometimes providing less than optimum care for an individual patient. Prevention, early detection and early treatment are the responsibility of medicine. Outreach activities are essential to bringing health care to individuals who do not freely seek it. Here we have the view point of community medicine and public health.

The notion of a target population is not compatible with the clinical view of medicine. As specialization becomes more intensive and practice more fragmented, it is difficult enough for the practitioner to maintain a holistic view of the individual patient, let alone feel concern for a total population. The major criteria by which performance is assessed are cure rates or survival curves for attended cases. A conventional solo or group practice is generally not held responsible for the deterioration of a potentially manageable condition for which no care was sought or for which care was sought elsewhere. Similarly, clinicians are generally not blamed for the incidence of potentially preventable illness, whether it is environmentally induced or the result of the afflicted's own behavior. Such limited accountability is a concomitant of the free-for-service payment mechanism, regardless of whether the fee is paid by the individual consumer or by some third party.

The introduction of prepayment into a group practice alters the situation. By contracting to provide the medical care required by an individual a specified time period, the group practice may be viewed as assuming a more general responsibility for the health of that individual. Thus, the enrollees in a prepaid group practice plan can be considered a population. Rates characterizing the health status and medical care utilization of such a population can be taken as, in part, reflecting the performance of the group practice. However, there may be certain difficulties in using these rates in the appraisal process.

- Usually, little information is available concerning characteristics of the enrolled population. This is currently being somewhat alleviated by the collection of rather detailed information pertaining to all family members at the time of registration. However, changes in family composition and various other characteristics occur frequently. Few plans have taken the trouble to keep current the data concerning their populations, even on a sampling basis.
- Enrollees are not generally captive populations. Some seek care outside the plan and considerable morbidity goes unreported within the plan's records. In a few instances, special interview surveys have been conducted to collect such supplementary information. However, these are expensive operations and have been conducted only rarely.
- In some statistical systems, the basis of tabulation is the individual unit of service (visit to the physician or nurse, hospital admission, laboratory procedure, etc.) The discrete encounters are not linked together or cumulated either in terms of episodes or individual enrollees. Under such a system, it is easy enough to count the aggregate number of visits of a particular type, compute the mean number of visits per person enrolled in the plan and even produce service rates specific to age-sex or similar groupings. What are missing are, for example, distributions by number of patient contracts during a given period, duration of interval between patient contacts and use patterns across different types of care. From aggregate service statistics we can learn about the workload of those providing the services. However, the cumulative services of a series of individuals over a time period must be reviewed if we are to assess the appropriateness of the allocation of staff effort among enrollees. If, as suggested earlier, a prepaid group practice assumes responsibility for the health care of an enrollee whether or not that enrollee actively seeks care, then we must have tabulations for which the enrollee is the statistical unit.

The organizers of the present conference have restricted participation to "representatives from university medical centers which provide medical care to a defined population." By relating the *services* provided by a medical facility to the *population* for which that facility is considered responsible, we have a more meaningful measure of process than if we had only service statistics. The "defined populations" supply the denominators for our rates. In this connection, we frequently need be concerned by the representativeness of our population or, at least, the comparability of the populations designated as targets by different plans. One of the chief purposes of each of the programs represented here is the promotion of scientific knowledge concerning the organization of medical services. In addition, even for purposes of internal management, utilization rates are interpretable only in comparison to the rates which have been experienced under other sets of circumstances. Since utilization rates are appreciably influenced by population characteristics, it is extremely important to determine how the various populations differ from each other. For instance, we need to know the extent to which the enrollment procedure of a given plan selects in favor or against families with high morbidity rates or a propensity to use medical services. Clearly, restricting one's target to an enrolled population does not permit one to ignore the more general population from which the enrollees were drawn.

While some university medical centers seem to be dealing exclusively with an enrolled population, whatever its origins, other centers treat the wider community as falling within the purview of their programs. Some of the plan administrators would like to treat as their target population all residents of a geographically defined catchment area. Such a broadly defined population creates, under present financing and organizational practices, several problems:

1. In situations where the operation of the center is to be supported primarily by public funds, a means test is frequently mandatory. Thus, it is necessary to have information concerning income, family size and perhaps additional financial information for each of a sample of families in order to estimate even the *size* of the eligible target population, let alone its characteristics. Unfortunately, adequate family financial data for a catchment area are only rarely available. Even if a survey had been conducted in the recent past, it is not likely that the resulting data would be useful in estimating the number of people eligible for services. The survey questions would have needed to have been so formulated as to elicit information conforming conceptually to the eligibility guidelines under which the center operates. Thus, something as simple as a count of eligible residents requires the initiation of a rather complex data collection operation.
2. It is sometimes implicit in the inclusive definitions of a target population that it is an objective of the center to provide care for all eligible residents of the catchment area. This goal may well be unreasonable. At the time of the inception of services, some members of the population will already have a satisfactory source of medical

care. It would be difficult to justify interference in an established medical relationship. Thus, in gauging success in terms of target population penetration, it would be desirable to exclude from the denominator those individuals who already have available services comparable to those being offered by the center. While it may sometimes be possible to draw inferences from operational records concerning alternative sources of care for certain limited segments of the population such as those covered by Medicare, more usually such information must be collected by interviews with a sample of area residents.

3. The problem of estimating the size of the target population is complicated further by the instability of the characteristics at issue. As unemployment increases one or two percentage points nationally, the impact on sensitive lower income neighborhoods can be a great deal larger. The size of the pool of families eligible to receive subsidized care may increase substantially. If one considers in addition the effects of migration differentials, changes in the regulations governing eligibility and changes in the accessibility of alternative sources of care it is clear that practically continuous data collection is required if estimates of the size of the target population are to be current.

It is clearly expensive to collect the data required for the relatively accurate estimate of the size of a broadly, but realistically defined target population. While the enrolled or registered population provides appropriate denominators for many of the utilization rates in which one is interested, a plan with a commitment to outreach as the foundation of its program would derive valuable feedback from penetration rates based on the components of its actual target population. Without a substantial investment in household survey data, community based penetration rates are often subject to such large errors as to make their use dangerous. On the other hand, a cost-benefit analysis may, in a particular instance, show large scale survey operations to be an uneconomic expenditure; alternative demands on limited resources may preclude adherence to high standards of survey methodology. My personal bias leads me to suggest that frequently even a small and relatively inexpensive systematic survey may well serve to correct widespread misconceptions concerning a particular population. I am perhaps unjustifiably skeptical about the accuracy of quantitative estimates derived from expert judgment rather than data.

# DISCUSSION ON
# PROBLEMS IN DEFINING TARGET POPULATIONS

### Chairman: Sidney S. Lee

In the discussion concerning the general concept of the target population serviced by the university medical care plans two fundamental questions were asked; what population does the plan attempt to serve; and why was this particular population selected? The consideration of these questions generated considerable discussion. On the one hand, the participants stated that health is social utility and therefore health care is a fundamental right of all persons in the community; on the other hand the university groups had to contend with varied demands and problems which limited the selection of their target population, and thus the number of persons the plan could serve. It was also noted that no health plan, of whatever nature, can take care of the total population of an area, and that university groups could not assume responsibility for blanket coverage of large populations.

In those plans which serve inner city poverty populations, such as the Community Group Health Foundation, Inc., or the Matthew Walker Health Center, the geographic boundaries themselves, as well as income level, limit the provisions of the services which can be offered. The same restriction is inherent in other plans where the provision of services is by definition limited to; 1) those who can purchase the plan; or 2) those who meet a regulatory demand.

From the viewpoint of the patient, it is practically impossible to set boundaries for eligibility, be they geographic or regulatory, that will satisfy everyone. There will always be people in need who live across the street from an established geographic boundary or who are prepared to travel great distances to obtain care at some particular facility. Undetermined proportions of the population will be "borderline ineligibles" for various reasons; such as family income level; or federal regulations when the government is the third party; or specific contract coverage provisions when a private insurance company plays the role. The university groups were acutely aware of these problems and expressed concern over the necessity of limiting their plans to a segment of the population when the people excluded could not be referred to an alternative source of care of equivalent quality.

Before beginning to function, each plan was encouraged to: comply with laws or regulations affecting incorporation of financing; assure third party payment; use existing insurance carriers for marketing plan; simplify the enrollment process for prepaid group insurance; permit the selection of study and control groups for research; obtain a desired blend of middle and low income enrollees; meet the request of organized community groups asking for service; set a ceiling number which conforms to a cross section of the total community population.

### Table I

### Summary of Target Population, Target Goal, and Number in Plan for Selected University Medical Care Plans

| Name of Plan | Target Population | Enrollment or Registration Goal | Numbers in Plan as of Date Given |
|---|---|---|---|
| Columbia Medical Plan | Prepaid group insurance plan, restricted geographically to Columbia, Md. and the surrounding area | 30,000 | March 11, 1970<br>2,600 |
| Community Group Health Foundation, Inc. | Restricted to those who meet O.E.O., Medicare, Medicaid and other eligibility requirements and live in upper Cardozo area (Neighborhood Health Center-group practice plan) | 20,000 | March 1, 1970<br>1,000 |
| Community Health Care Center Plan, Inc. | Prepaid group insurance plan restricted to labor union members plus other non-union groups in Greater New Haven to be selected to represent sample of cross section of total population | 30,000 | March 11, 1970<br>N.A. - Center to open in late 1971 |
| East Baltimore Medical Program | Prepaid group plan on per capita basis restricted to residents of low income housing project in East Baltimore | 5,000 | March 11, 1970<br>N.A. - Program to begin in late 1970 |
| Harvard Community Health Plan, Inc. | Prepaid group insurance plan restricted to Greater Boston area; per capita for Medicaid eligibles in Mission Hill area of Boston | 30,000 | February 15, 1970<br>1,100 |
| Medical Care Group of Washington University | Prepaid group insurance plan restricted to 500 selected families, employed in companies with Metropolitan Life Insurance group insurance coverage | 500 families | March 3, 1970<br>300 families |
| Meharry-Matthew Walker Health Center | Restricted to those who meet O.E.O., Medicaid, Medicare and other eligibility requirements and live in specific low income geographic area (Neighborhood Health Center) | 35,000 | October 1, 1969<br>1,491 |
| UCLA Community Health Care Prepayment Plan | Prepaid group insurance plan restricted to university employees and other groups in specific geographic area | 36,000 | February 25, 1970<br>N.A. - Plan to begin late 1971 |

Clearly, the realities of marketing and financing the university medical care plans put constraints on the populations to whom the service benefits can be offered. It was agreed, therefore, that the target population should be defined as the population, eligible by a variety of economic or geographic criteria, to which the plan will offer its service benefits. Thus the target population is essentially the "market" which the plan would like to reach.

The following table presents a brief summary of the discussions of the target populations of different plans.

Additional discussions about definitional problems relating to the population brought out the need to determine the relationship among the target population, the elements within that population who are "at risk of receiving service," and those individuals who are actually served by the plan. In an epidemiological sense, the enrollees in the prepaid plans would be "the population at risk of receiving services"; in the neighborhood health centers "the population at risk of receiving services" would be the registrant population.

## REACHING THE TARGET POPULATION

As shown in the Table, the requirements for entry into the medical care plans varied but, in general, included one or more of the following:

1. **Enrollment** in the plan through prepaid group insurance, usually related to company employees, union members, or other organized groups within a defined geographic area and requiring a contractual relationship to receive the service benefits offered by the plan;

2. **Registration of persons from geographic, low income area** usually related to persons who meet neighborhood health center eligibility guidelines; registration in such a plan is through a household canvass, survey, or a family member seeking care at the center; service benefits are available to all persons who meet eligibility requirements and live in the specified area;

3. **Eligibility** to receive care through Title XVIII, Title XIX, or other government programs usually related to agreements between the medical care plan and the state department of welfare (or other appropriate official agencies) which enable the plan to provide service benefits on a per capita basis to a limited number of persons in the appropriate eligibility category; the limits can be set by specific number of persons and/or the geographic area.

Discussions centered on the difficulties faced by the plans in trying to assess the degree to which their target population are being reached. It was pointed out that the mode of entry adopted by the plans is a major factor in determining not only the target population to be served but also the method for evaluating the degree to which the needs of that population are met. Except for the enrollment process, the method of entry may present serious difficulties in obtaining information about those segments of the target population which are at risk of receiving service but not served-- a critical issue in the evaluation of how well the plan meets one of its prime objectives, to improve the health of the target population.

It was observed that any estimation of the size of the target population is complicated by the instability of the characteristics at issue. As unemployment increases, perhaps only one or two points nationally, the impact on sensitive lower income neighborhoods can be substantially larger. The number of families which are eligible to receive subsidized care may increase significantly. There are also factors of migration differentials, changes in the regulations governing eligibility, and changes in the accessibility of alternative sources of care. Thus it is clear that some type of contining data collection is required if estimates of the size of the target population are to be current and accurate.

## SOURCES OF DATA AND CHARACTERISTICS OF THE POPULATION

All of the university groups obtain demographic data on those persons in their target population who choose to enter the plan. These data are collected at the time of enrollment for all persons who enroll in one of the university prepaid group plans. Thus there is a clearly defined "population at risk of service" for the prepaid group plans. In such plans as the neighborhood health service centers, data are collected at the time of registration which usually occurs at the time a person first seeks medical care and completes a registration form for himself and for other members of his family. Thus because of the manner of registration and the lack of contractual relationship there are large segments of the population for which there are no data, and therefore, no clearly defined "population at risk of receiving service." In an attempt to minimize this problem, some of the plans conducted household canvasses to pre-register persons eligible for service; other techniques include mail surveys, household sampling, and general population surveys. But the basic point at issue in all the plans is that a continuing relationship has been established between the plan and the target population and that therefore a determined effort should be made to further this ongoing process.

Both Dr. Feldman and Dr. Elinson discussed the many difficulties involved in such endeavors. As one example of the difficulties, the Community Health Foundation, Inc. noted that the usefulness of their population survey data is limited due to the high mobility of the young adult, black male and to the constant changes in eligibility requirements. However, current data from surveys being conducted by the East Baltimore Medical Program and by the

Columbia Medical Plan indicate population mobility will not be a very grave problem. Household surveys are being conducted in each of these communities in order to obtain demographic data on the target populations of each of the plans.

The Community Health Care Center Plan will attempt to enroll a population corresponding to a cross-section of the total population with a possible higher representation of low income families. Currently, baseline data are being collected to be used for pre- and post-enrollment studies of their target population. For comparison, these data include an appropriate sample of the total population of the greater New Haven community. The Matthew Walker Health Center is attempting a "head count" census in its geographic area to obtain data on the total population and on the target population. During the interviews, the Center attempts to discover the number of people who will use the Center as their source of health care.

The demographic characteristics of the populations to be served by the university medical groups show great variation. With respect to the enrollment populations there are attempts to obtain a 20-30 percent enrollment of low income groups through per capita or other prepaid mechanisms. By contrast, plans with registrant populations contain an overwhelming majority of persons from low socio-economic groups. Age, race, and sex characteristics also varied markedly among the different plans.

In addition to the current population data being collected, the university groups discussed the need to develop methods for keeping up with the changes not only among the "population at risk of receiving services" in their plans, but also in their target population. The prepaid group plans did not consider the up-dating process a major problem since those who enrolled were covered by a contract which terminates if the enrollee leaves the plan. The dual choice option of some university prepaid plans offers a method for obtaining data on the target population, since it is possible to obtain data on those persons who selected either plan. All agreed that the problems facing plans with a registrant population are enormous, and although there was much discussion, no solutions were underlined. The use of sample surveys, telephone or mail surveys and other techniques were among the methods being considered. However, Dr. Feldman expressed his skepticism about the accuracy of quantitative estimates derived from expert judgment rather than data, and he said that without a substantial investment in household survey data, community based penetration rates are often subject to such large errors as to make their use dangerous.

## MEASURING ACHIEVEMENT

Since most of the plans vary in the criteria for selecting their target population, in the priority of their objectives, and in the characteristics of their target population, any attempted comparisons among the plans should be viewed with utmost caution. Although each of the plans is seeking ways to measure its impact on its target populations, the groups agreed that each, of course, has to establish its own criteria for measuring achievement. Yet, beyond the question of performance, Dr. Elinson pointed to the need for the "outside observer" to have some framework within which to evaluate the objectives of the plans. Thus he suggested two approaches: 1) an evaluation of the plan's progress in achieving its objectives; and 2) an evaluation of the social utility of the objectives. The latter approach would require the identification of some non-quantitative criteria for assessing the degree of social utility in the objectives of the different plans. A discussion ensued concerning the difficult judgments which had to be made in order to assign values to each of the items in individual plans. For instance, in the area of involvement, a judgment has to be made about community control as opposed to university control, and in the area of funding, a judgment between grants and insurance; in the area of objectives, between service to a large number of people and training and research; in the area of responsibility between a determined enrollment campaign and a laissez-faire attitude where enrollees are accepted only when they happen to apply.

During this review, the university groups began to delineate similarities of purpose and once more to focus on ways to make comparisons among the plans. The participants felt that, to the degree that the medical care plans share a common purpose, it should be possible to develop information which could permit comparison of utilization and costs. Thus the capability of the plans to make such comparisons depends upon similarity in the target populations and in the determination of the "population at risk of receiving service" during a specified unit of time.

A major conclusion emerging from this session was that coming to grips with the issue of target populations is a difficult but crucial task. Yet it is essential that the services provided by the medical care plan be related to its target population in order to determine the significance of the health care programs in the total fabric of services in the community.

# OPENING COMMENTS ON EVALUATION OF MEDICAL CARE PROCESSES

**Joseph Axelrod**

The charge for this critique was to appraise the "design of record systems which will yield criteria to serve as indices for characteristics of the defined population, utilization of services, attitudes of enrollees and staff and behavioral changes" of seven health center plans, each associated with a university.

Reviewing the material submitted by these programs, it is evident that their evaluation plans in terms of medical care processes are not completely stated. In some cases plans for evaluation may not yet be fully formulated, in others they may only have been omitted from the submitted texts, and in some there probably are real gaps. Tables 1 and 2 attempt to reflect the stated methods for collection of data and evaluation of utilization, attitudes, behavior and satisfaction. Table 3 relates to research and teaching. The blank spaces indicate those elements of information not specifically mentioned as included in the evaluation plan or which cannot be inferred from other information.

What we see is a pattern of strict attention to utilization and limited concern with evaluation of attitudes, behavior, compliance, and satisfaction of patients. In some of the medical care plans only termination of membership will alert the plan to problems in these areas. Four of the plans fail to mention provision for studies of broken appointments, non-utilizers, compliance with outside referrals, and compliance with prescribed regimens. Only two of the programs state methods to be used for complaint review and studies of patient satisfaction, although it would be difficult to believe these will not be established. In only two plans is the intent shown to report frequency distributions of enrollees by number of physician and/or medical services received. These data are often valuable indicators of the need for better communication with patients, more appropriate referral patterns, and specific health education programs.

Compliance with prescribed referrals, diagnostic services, therapeutic regimens and follow-up are the stated objects of recording of only three plans. This is not a simple process, and one can be bogged down in methods attempting to attain 100 percent compliance. A recommendation which is realistic in this regard would be limited to sample studies and spot checking. If prescriptions for medication were all filled at the plan's pharmacy, prenumbered prescription blanks could be checked occasionally for compliance. At the

TABLE 1. EVALUATION OF THE MEDICAL CARE PROCESSES BY UNIVERSITY GROUPS AS INDICATED IN PRELIMINARY PLANS – APRIL 1970

| Utilization | Harvard HCHP | Hopkins CMP | Hopkins EBMP | Howard CGHF | UCLA CHCPP | Wash MCG | Yale CHCCP |
|---|---|---|---|---|---|---|---|
| Number of physician services* . | x | x | x | x | x | x | x |
| Number of other professional services** .............. | x | ? | ? | x | x | x | x |
| Number of hospital admissions***........... | x | x | x | x | x | x | x |
| Number of E.C.F., etc. admissions*** .......... | x | x | x | x | x |  | x |
| Number of preventive services** | x | x | x | x |  | x | x |
| Frequency distribution of enrollees by number of physician services ........ | x |  |  |  |  |  | x |
| Plans for comparison with other populations............. | ? | x | x |  | x | x | x |

*By: Unit of time, type of physician, place of service, appointment/non-appointment, and patient characteristics.

**By: Unit of time, type of service, place of service, type of case, type of tests, and/or procedures.

***By: Unit of time, length of stay, patient characteristics, discharge diagnosis.

least, a roster of patients with proved, life-threatening diagnoses requiring follow-up should be checked at intervals to identify the noncompliant for special attention.

A form is employed in each plan which serves as a route slip, disposition, or encounter record intended to document each "in person" contact with the plan. Generally, these forms are very comprehensive in terms of the information recorded. In addition to the suggestion that the terminology in the encounter forms could benefit from standardization, recommendations follow which would make the forms more useful:

- Although it is not indicated in any case, it would seem to be valuable to pre-number these forms so that spot checks of total reporting can be made.

### TABLE 2. EVALUATION OF THE MEDICAL CARE PROCESSES BY UNIVERSITY GROUPS AS INDICATED IN PRELIMINARY PLANS – APRIL 1970

| Attitudes and Behavior | Harvard HCHP | Hopkins | | Howard CGHF | UCLA CHCPP | Wash MCG | Yale CHCCP |
|---|---|---|---|---|---|---|---|
| | | CMP | EBMP | | | | |
| Plans to measure behavior, attitudes, satisfaction: | | x | | x | x | x | x |
| a) Broken appointment studies | | | | x | x | | x |
| b) Non-utilizer studies . . . . . . | | | | x | x | | x |
| c) Use of non-plan doctors studies. . . . . . . . . . . . . . . | | | | x | x | x | x |
| d) Complaint studies . . . . . . . | | | | x | x | | |
| e) Transfer/termination studies . . . . . . . . . . . . . . | x | x | x | x | x | x | x |
| f) Consumer participation effectiveness studies . . . . | | | | x | | | |
| Can the record system obtain: | | | | | | | |
| a) Number of outside referrals and compliance . | | | | x | x | | x |
| b) Proportion of patient compliance with prescribed regimen . . . . . | | | | x | x | | x |
| c) Barriers to utilization . . . . . | | | | | x | | |
| d) Patient satisfaction/ dissatisfaction with services . . . . . . . . . . . . . . | | | | x | x | | |
| e) Patient satisfaction/ dissatisfaction with clinic operations . . . . . . . | | | | x | x | | |
| f) What will be the frequency of data tabulation? . . . . . | mo. | mo. | | | | | |

### TABLE 3. EVALUATION OF THE MEDICAL CARE PROCESSES BY UNIVERSITY GROUPS AS INDICATED IN PRELIMINARY PLANS – APRIL 1970

| Research and Teaching | Harvard HCHP | Hopkins | | Howard CGHF | UCLA CHCPP | Wash MCG | Yale CHCCP |
|---|---|---|---|---|---|---|---|
| | | CMP | EBMP | | | | |
| Description of research planned in delivery of care . . | x | x | | x | | x | x |
| Description of teaching link, and whom taught . . . . . . . . . | x | | x | x | | x | x |
| Teaching program financing . . . | | x | | x | | | |
| Teaching program evaluation . . | | | | x | | | |

- Day of the week, date, and time stamps would also prove valuable in relating onsets, first contacts, workups, counsultations, treatment, disposition, and follow-up intervals, as well as to provide information from which traffic flow studies can be made.
- Somewhere on the form there should be a place for the appropriate person to affirm that, to the degree possible, the diagnosis, treatment, follow-up and/or health maintenance plan recommended for the patient was communicated fully to him.
- The same form should be able to be used to record home and inpatient contacts with plan staff members.

The "defined population" of each plan requires clear delineation as well as standardization of terms. Here each plan should work toward identifying its population by some enrollment process linked to establishment of a permanent identity number. From these data the denominator of persons-at-risk by age, sex and family relationship can be established as a basis for utilization reporting.

Effective and efficient delivery of medical services are common goals of all the plans represented. Yet, some plans have apparently not included testing attainment of these goals either by regular feedback or based on special studies. Mere compilation of utilization data and their analysis will fail to supply causes and possible correctives to the important questions concerning broken appointments, the non-utilizer, the use of outside obstetricians, surgeons, and hospitals; nor will patient compliance and satisfaction be evident.

# CRITIQUE ON EVALUATION OF MEDICAL CARE PROCESSES

**Kerr L. White, M.D.**

Results are what count in patient care. Ends, not means, are the criteria by which we are judged both by our patients and our profession. To the extent that examinations of processes explain variations in outcomes, they are useful exercises. To the extent that such examinations generate statistics activities alone, they are useless, if not harmful. They may detract from the important issues and are certainly expensive.

A critique of processes isolated from their relationships to objectives and outcomes is virtually impossible. The objectives of all six university medical care plans, however, strike me as vague and obscure. Only two offer any statements that suggest that serious thought has been given to their objectives in relationships to patients' needs. The UCLA plan states as its first objective: "to influence *favorably (reduced) incidence* and *severity* of health impairment (aggregate) in the *population* (insofar as it is technically possible and economically feasible)." The Howard University Plan has as its first objective: "to *intervene* in the poverty cycle through *improving* the health *conditions* of the *residents* of the Upper Cardozo *community* by providing better health care."

For the rest, their objectives deal with processes, mechanisms of care or with matters of interest largely to the professionals or the administrators.

The operative phrases in these two statements are: reduce, incidence, severity, impairment, intervene, improving and conditions. The emphasis is on populations defined first geographically and second by enrollment. It is not my assignment to elaborate on measures of end-results or outcomes, but it will be necessary to refer to them in order to illustrate the utility and the relationships of these to process measures.

If we are to discuss populations, we can express our results in rates that are related to either general populations or enrolled populations as the denominators. Age and sex standardization, to a standard population, would permit comparison between plans. I suggest that all measures for the six plans be expressed first, in relationship to their enrolled populations; second, in relationship to individual physicians or patient care teams; and finally, in relationship to patient care problems. Data about visits "made," patients "seen," x-rays "taken," tests "done," diagnoses "established," injections "given," and pamphlets "passed" are useless, in my judgement, unless they are related to the population served, to the individuals (professionals) giving the care, or to the problems or conditions presented by the patients, and of course, to the end-results of care.

The most useful clinical documents for our present purposes proposed by the plans are the Patient Encounter Forms; their value is enormously enhanced to the extent that they are "problem oriented."[1] I like the Hopkins' encounter form; particularly since our group has been deeply involved in its development!

There is probably too much information recorded, but it is a much shorter form than the one originally proposed. A simple statement of the patient's complaint or problem is the starting point. the classification scheme devised by Bain and Spaulding[2] is a start, but it will require refinement on the basis of further experience. The ICDA is unsuitable for diagnostic classifications in its present state, but a modification developed over the years by the Royal College of General Practitioners has proven useful.[3]

The layout and terms used on the Howard encounter form are less formidable than those on the Hopkins form and they may well be sufficient. I like the functional terms employed. Episodic Care, Initial Health Assessment, Long-Term Health Care Management and Routine and Preventive Care, together with the No-Disease grouping that includes Family Planning, seem more useful than the Hopkins mixture of purposes, procedures and treatments. Duration of the encounter is important, particularly if we are to look for places where time may be saved and productivity increased. There are arguments for ad hoc studies that keep track of each patient's temporal movement through a clinic by stamping the time that he starts and completes each phase of the medical care process, but I doubt that these are advisable for routine use.

The Harvard form makes a most useful contribution, in my view, in its classification scheme for assessing the Activity, Certainty, Severity and Rate of Progression of the patient's problem. Their printout also refers to the Resolution of the patient's problem; this seems a desirable additional category. There are critical decisions that clinicians, be they physicians, medical assistants or nurses, must make when first encountering a patient and his problem. How active is the process? How certain is the clinician of the diagnosis? How severe is the problem? How rapidly is it progressing or resolving? I would add a sub-category under management called Need for Intervention, e.g., Emergent, Urgent, Elective or Expectant. Disposition is an important phase of the medical care process, and it should certainly be included since it alone provides evidence of professional and organizational responsibility and of continuity in patient management. We included this category on the Hopkins form.

I see no reason why it should not be possible to at least standardize the terms used on encounter forms by the several university medical care plans. If all, or several of the plans, would adopt a number of the same categories, classifications, and definitions, it might be possible to achieve some real uniformity and enhance the prospect of comparisons. Unless such steps are taken, comparisons will not be possible.

Patient management requires clinical data of the type described on these encounter forms and the variations suggested above. Institutional and organizational management of resources and facilities to meet patients' needs requires that the clinical information be related to personal data and to financial data. Insofar as personal data are concerned, the major problem of patient identification needs to be addressed. There is a need to develop uniform systems of patient identification. This is widely recognized in relationship to hospital care, and a sub-committee of the National Committee on Vital and Health Statistics is now considering methods of standardizing patient numbering systems.[4] The United Kingdom is seriously considering the introduction of record linkage for all hospital discharge data nationally.[5] There is every reason to think that similar advances will be made in the United States. The university medical care plans should certainly be in the forefront of this movement.

If the use of ambulatory care is to be related to in-patient hospital care, linkage between the ambulatory phases and the hospital phases of care should be achieved by some form of positive identification. The advantages of developing a system that would be compatible between the several university medical care plans is persuasive. There is first the opportunity for comparisons among the plans. In addition, patients enrolled in one plan when they move to another metropolitan area where a similar plan exists are, assuming that the plans are successful, more likely than other new immigrants to transfer to the local university plan. The possibilities over the years of following patients would be enhanced by a uniform identification system. There are three general numbering systems that are currently being considered. First is the Social Security number. The problem here is that the number is not assigned until an individual either opens a bank account or enters the labor market. There are also internal problems with the number itself and with its distribution nationally. Second is the birth registration number. It provides the best long-term prospect, but it will be thirty to fifty years before adults carry these numbers. The third system is the Hogben Identification System that utilizes the patient's name at birth, date of birth, and perhaps one other form of positive identification. These are technical matters that need to be addressed by some group and the universities are in the best position to do this. Each system has advantages and disadvantages.

In connection with personal data, there is a need to express all tables describing the university medical care plans in compatible age groups. I suggest that the WHO age categories be used. These groupings break in the middle of the decades, i.e., under 1, 1 to 4, 5 to 9, etc. This arrangement avoids digit preferences that are associated with inaccurate reporting of ages. Marital status data should be classified in identical fashion by all plans. There is an even more important aspect of the patient's household arrangements that merits attention. In relationship to patient care, it is frequently more important to know the patient's living arrangements that it is his martial status. Accordingly, classifications of living arrangements that include Living Alone, Living with a Nuclear Family, Living with an Extended Family, or Living in an Institution, may prove useful.

The third broad category of data relates to financial matters. The only useful contributions to this problem that I could find in the statements from the six university medical care plans was that from the UCLA plan. The adoption of the accrual system of accounting in contrast to the cash accounting system seems an important advance. The former is the method used by contemporary industry. It permits the identification of costs for supplies, merchandise or services when they are received and used, rather than when the invoices are paid. This permits a closer examination of the relationships of revenues to expenses by each cost center or department. Basic to this method is the establishment of functional cost centers along the lines proposed by the American Hospital Association.[6] Some 100 classifications of expenses and revenues and 200 cost centers are advocated for the hospital environment. By clearly defining these cost centers and by associating them with defined elements in the medical care process that are in turn linked to patient problems and to the outcomes and end-results of care, there is a possibility that some real leverage may be possible on individual elements of the patient care systems and that meaningful comparisons can be made between plans.

The use of relative value scales seems to be less satisfactory since this approach tends to be based on empirical justifications for charges rather than on actual assignments of identifiable costs. The concept of episode of illness as advance by Solon et al., provides a temporal dimension that permits grouping processes in relationship to the patient's presenting problem.[7] A good deal of work needs to be done in this area and the Howard classification scheme is a useful first step.

One additional problem merits consideration. If the several university medical care plans are to be compared, it is important that the denominators be clearly defined by geography, by enrollment and by demographic characteristics. There is also a need to define the time dimension. It would be helpful if enrollment dates could be standardized among the plans or, at least, established on a semiannual basis so that there will be some measure of stability for each plan's denominator. The possibility exists that person-months of "exposure" to care from the plan might be a reasonably satisfactory substitute.

To summarize these comments, I suggest that the accounting data system be developed in parallel with the clinical data system and the personal data system. The establishment of cost centers and the adoption of the accrual method seems desirable. Uniformity in the basic categories, classifications, terms and definitions employed by all university medical care plans should be encouraged. A classification scheme based on the major types of Episodes of Illness and Units of Long-Term Health Care and another based on categories of Patient Problems should be developed as soon as possible. All data should be expressed as rates with age and sex standardization to an agreed standard population.

Now let me attempt to link processes to outcomes. If the objectives defined by the Howard and UCLA groups have any validity, it would seem important to maintain on the Patient Encounter Form, or on related records, a running account of levels of patient impairment. Some of the problems associated with these measurements are reviewed in the UCLA evaluation plan prepared by Houten and Du Bois.[8] The easiest way to obtain this information is to ask the patient at the time of his visit about the number of days in the previous week or two weeks that he has been unable to undertake his usual or customary activities, the number of days he has spent in bed, the number of days (usually in the past 48 hours) that he has experienced pain, and the number of drugs he has taken during that period. Expressed as standardized rates for the enrolled populations, these reflect the burden of impairment brought to physicians.

The most difficult phase of data collection for outcome data occurs after the patient leaves the physician's office. When disposition of the patient includes a return clinic visit, data about impairments may be collected on the second and subsequent visits. After the terminal visit for each episode of illness, however, the patient is not seen again. For some forms of episodic care that are self-limited or that are resolving satisfactorily, it may be difficult to ask the patient to return. A useful method is to employ a prepaid postcard on which the patient reports his status, including days of impairment during the intervening period since his last visit. Where postcards are not completed, a telephone call from the nurse or physician's assistant is the only responsible way to deal with failure to comply; it is the same approach that should be used with a broken appointment. These arrangements permit measurements of patient care outcomes as reflected in impairment that can be related to processes and to patient problems. The periodic household survey is another method of developing cross-sectional population-based estimates of impairment, disability, discomfort, and drug utilization. Such measures are necessary for estimating the burden of impairment for those patients who live within the geographic boundaries of the plan, but who are not enrolled, and for those patients who are enrolled, but who do not use the available sources.

What are some of the process measurements that might be helpful in patient management and in medical care plan management? The possibilities are endless, but let me suggest a few:

1. Visits, laboratory tests, x-rays or prescriptions;
2. Normal or abnormal laboratory or x-ray findings;
3. Preventive care visits, immunizations, or health reviews and,
4. Cost of all ambulatory, in-patient care, laboratory tests, x-rays or prescriptions, using the following parameters for each of the above items:
   –per thousand activity limitation, bed disability or discomfort days,
   –per thousand short-term episodes of illness (URIs, UTIs, GI infections, etc.),
   –per thousand patient-months (or other units) of long-term health care management,
   –per thousand patient-days of hospital care,
   –per physician, nurse, enrollment module, or health team; and where pertinent per thousand "no need to return" or "return prn" dispositions; or per one thousand night calls or emergency room visits.
5. Activity limitation, bed disability or discomfort days
   –per problem type, e.g., otitis media, URI, essential hypertension, cardiac failure, peptic ulcer disease, etc.
   –per physician, nurse, enrollment module, or health team.
6. Laboratory tests, x-rays or prescriptions,
   –per thousand visits by mean duration of patients' waiting times,
   –per thousand visits by medical care plan personnel absentee rates;
   –per thousand visits by non-professional labor turnover rates,
   –per thousand patient telephone calls by physician, nurse, enrollment module, or health team.

All of these sets of data should include appropriate age and sex denominators, should be age and sex standardized for comparisons between physicians, health teams, or enrollment modules, and for comparisons between medical care plans.

Perhaps enough has been presented to suggest the directions in which I think process evaluation should develop. Patient problems should be linked to processes and both to outcomes. Personal, clinical and financial data are the critical categories that need to be considered. Rather crude population measures are a first step. They will suggest other relationships for future examinations that may explain observed variations. A few interesting tables prepared for clinicians and for administrators are to be preferred to endless piles of computer printouts that are rarely examined by anyone and that have little to do with effective and efficient patient care.

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# DISCUSSION
# ON EVALUATION OF MEDICAL CARE PROCESSES

### Chairman: Paul M. Densen

The participants in the discussion agreed that in addition to their common purpose of attempting to serve patients in more effective and satisfactory ways, the university medical groups must also make a determined effort to measure the degree of success in achieving their objectives.

A fundamental consideration in any evaluation of medical care process is a determination of the actual use of the plan by the population it is designed to serve. This approach should attempt to relate the services, manpower allocations, and expenditures to the requirements of the population it is to service, and subsequently to the results of the care which has been received. The discussions concerning specific procedures which might be used by the medical care plans focused on the design of a flexible record system, which would serve several purposes: to foster good patient care; to provide management with data for operational needs; and to provide a basis for research and for evaluation.

## RECORD SYSTEM

The potential for investigating factors which may influence the patterns of use and the patterns of delivery of care lies in the design of the record system of the medical care plan. The participants faced this issue in their attempt to reach a clear concept of the target population to be served by the plans; and in their discussion of ways to obtain information which would permit comparisons among different plans.

In trying to form some general guidelines for items to be included in a basic record system, one major rule underlined by the participants was the importance of limiting information obtained on a routine basis to data essential to the day-to-day operational management of the plan; another was the need for flexibility in the system which allows the collection of data not only for day-to-day management purposes but which provides the starting point for research into specific questions which may arise.

The participants considered as critical the question of how to obtain the array of items discussed by Dr. White and urged that attention be directed to those items which should become part of a basic record system to be collected and tabulated on a routine basis, in contrast to those items to be collected but tabulated only on an ad hoc basis for special studies. These distinctions were considered essential to prevent overloading the record system to the point where an endless amount of routinely tabulated data interferes with the management of the program. Obviously the point at which one draws the line is to some degree a matter for the individual plan, and decisions referring to recording, tabulating, and retrieving data have to be made at each step along the way. It is the price the plan has to pay for specific information that is the crucial factor in making these decisions; in other words, the decision depends upon what the plan may be required to forfeit in order to accommodate the data. A proposed general rule was to collect "what comes naturally." Therefore, who is seen, by whom, and for what purpose were considered minimal requirements.

Although a great deal of thought has been given by the medical plans to the mechanics of a record-keeping system, there had been limited consideration of the kinds of questions one should ask to obtain measures of how well the objectives of the plan are being met. One crucial point emphasized by the participants was the lack of a conceptual viewpoint based on epidemiological principles in the approach to the record system which limited the system to the mechanical function, rather than relating it to other aspects of health care. The record system should serve as a link between health services provided, continuity of care offered, and quality of patient management. A well designed system is essential for assessing patient care and it should provide data for continued monitoring to ensure that the program is sound, the quality of care acceptable, and that problems requiring research or additional study are indicated. To make an assessment of the contribution of any of the university medical care plans to the total fabric of health services in the community, it is vital for each plan to know not only the extent to which it reaches the population it seeks to serve, but also the degree and manner in which its plan is used. Utilization data are required for two major purposes: 1) for managerial control which permits effective and efficient allocation of manpower, services, and facilities; and 2) to serve as a basis for planning and evaluation. To serve these purposes, the utilization data must be so organized as to permit comparative analysis both within the plan and between plans. To make such analyses it is essential that comparisons be made in the form of rates which relate the number of events (or services) occurring in a given period of time to the number of individuals who could experience the event (or risk of receiving service) during the same period of time. Three items are essential for a rate to have epidemiologic usefulness: the numerator (number of events of interest); the denominator (the population among whom the events of interest are observed); and a specific period of time. In considering prepaid medical care plans the rate could be defined as:

$$\frac{\text{Number of physician services received by the population enrolled in the plan during the year}}{\text{Average number of persons enrolled in the plan during the year}}$$

The participants noted that most of the plans have information about the numerator, but a major problem of such plans as the neighborhood health center is the determination of the denominator--the size of the population among whom the events of interest are observed.

The population enrolled in a university prepaid plan is covered by a contract which terminates when an enrollee leaves the plan. This provides the plan with a mechanism for maintaining a reasonably up-to-date enrollment file which makes it possible to obtain basic population data and to observe not only change in the number of enrollees from month to month, but also the comparative change from month to month or from year to year. It is this comparative change which provides the basis for management control and sets the stage for program evaluation.

The population in many neighborhood health centers, on the other hand, is quite different from that of the enrolled population in a prepaid plan, and it is much more difficult to define or count accurately. This client population is usually generated by having the members of the family of a patient register to receive services at the center, or by attempting to register the people living in the neighborhood through some form of canvass. The registration process requires no contractual arrangement, and therefore, there is no systematic way of determining when a registrant leaves the area or stops using the center. Therefore, plans serving registrant populations have difficulty in determining true rates of utilization. For these reasons, rates based on registrants may not be comparable to rates based on enrollees because there are different selection mechanisms at work.

The most common measure of the amount of service rendered by a plan is the total number of physician services or encounters provided during a given period of time, divided by the reference population (enrollees or registrants in the plan) during the same year. But it is also often important to determine the distribution around the average, as well as the average itself: that is, to be able to determine how many enrollees did not utilize the plan in a year, and how many have one, two, or three, or more encounters in a year. Knowledge of this distribution makes it possible to determine who are the high and low utilizers, what their characteristics are, and whether there is a relatively small proportion of persons in the plan who receive a large volume of the services. These data provide invaluable information for managerial control and epidemiological research. For example, two different systems of health care might have the same average number of encounters per 100 person units, but quite different distributions around that average.

However, in order to determine the frequency distribution it is necessary to design the record system so that the unit of analysis is the individual. It was suggested that record systems be designed so that the frequency distribution could be calculated if desired, even though such a distribution is not required on a routine basis. This means that it is necessary to bring together all the encounters on a given person during a stated period of time. Without this ability to count the people who receive the services as well as the services themselves, it is impossible to determine how effective the plan has been in reaching its target population, and it is also practically impossible to compare the experience of one program with another.

In order to count people as well as services it is essential to have a way to link all of the services received by a given person. In a majority of the plans this link is obtained by assigning an identification number to each person enrolled in one of the group prepaid plans or to each person registered at a neighborhood center. Each service received by this individual should be identified with the person's identification number. Through the use of appropriate computer devices it is then possible to bring together all the services received by a person with a given number.

In addition, if the plan is to get a picture of its utilization it is important to make sure that all the services it renders are counted. There may be some organized system to ensure completeness of reporting of services. Many plans have begun to adopt an encounter form to record the number and kinds of services rendered to the population which they serve. However, the use of encounters to measure services poses two major problems. First the recent development of allied health personnel who take over many of the duties that the physician performed in the past means that today the equivalent of what was once the average number of physican services per person per year has become the average number of encounters with primary providers per person per year. In this context, the primary provider is either a physician, dentist or other person who has responsibility for assessing the condition of the patient and exercising independent judgment as to care of the patient. Therefore, it is essential that the plan develop its internal structure in such a way that these encounter forms are filled out systematically and routinely each time an encounter occurs with a primary provider.

The second problem relates to the plan's need for the number of encounters with all staff members who provide a service. This information is needed for internal use by individual plans for looking at manpower utilization and costs. These data should be obtained on a sample, special study basis. For purposes of recording basic data, the encounter form must make it possible to indicate the nature of the encounter and the type of provider seen.

The participants also noted that precise data on the type of provider are essential for those plans which receive per capita or other type of payment for Medicaid or Medicare eligibles. Since reimbursement under such arrangements is usually based only on physician encounters, the services of physicians must be clearly distinguished from encounters with other primary providers.

The participants observed that the total utilization rate is of very little value either for day-to-day operations of the plan or for purposes of evaluation or research. It is knowledge of the major variables affecting the size of the utilization rate which is essential to the plan's day-to-day operations. There are, of course, innumerable factors influencing utilization, and it is obviously impossible to take account of all those variables in studying the patterns of utilization. However, there are certain major variables such as age and sex which have great impact on utilization. It is essential that the administrator of a medical care plan have knowledge on a regular basis of the influence of these variables on the utilization of his plan. A basic principle suggested by the group is that for every characteristic of the plan's population for which one wishes to examine utilization on a routine basis, it is necessary to obtain information on this variable both on the encounter form and on the enrollment or registration card. It was agreed that it would be desirable to develop an encounter form which as a minimum would provide the basic data required for routine analysis but which could be expanded as desired by individual plans in accordance with their special requirements.

## MEASURES OF PERFORMANCE

Several different approaches to measuring performance were discussed. Among the standards of comparison suggested were the use of data from the National Health Survey or other national statistical series and the use of norms generally agreed upon by experts in the field.

For instance, National Health Survey data indicate a utilization rate of about 4.5 physician services per person per year for the country as a whole. After appropriate adjustments for differences in demographic composition, a plan can determine whether its own utilization rate is generally high or low.

Similarly it is generally agreed that it is desirable for prenatal care to begin early in pregnancy. A plan can measure its performance in this regard by examining the trend in the proportion of pregnant women who come in for prenatal care in the first trimester of pregnancy. In the same way, pediatricians recommend that certain immunization schedules be adopted in caring for the young child. A plan can use these recommendations as norms against which to judge its performance. Whenever possible such norms should be based upon scientific evidence which establishes their validity.

The participants agreed that while the use of statistical series or norms is useful in giving the plan an indication of its performance relative to some average, thus providing a basis for further examination, it is difficult to tell whether any differences found between the plans performance and the standard of comparison are due to the special characteristics of the plan or to outside influences. To determine how much of any observed difference is due to the plan requires carefully controlled special studies.

As an example, the point was made that many of the plans stated as a goal a reduction in the incidence of hospitalization. While the operating data of the plan should provide information on the rate of admission and length of stay in the hospital and these data can be compared with available published data, the determination of whether any observed difference is the result of the plan's efforts requires a carefully designed study. The participants then went on to discuss potentials of this approach.

## SPECIAL STUDIES

Several of the medical centers outlined special studies and specific methods for gathering data which might be used to compare and/or assess the performance of their plans. These methods include: analysis of utilization of hospital services by a study and control group setup for this purpose by the Washington University plan; periodic surveys of the population, prior to and after enrollment, to be conducted by the Yale plan; analysis of before and after information on use of services based on survey data obtained by Johns Hopkins in both Columbia and East Baltimore; the UCLA plan which will attempt to compare patients served by different medical care teams. A crucial question raised by the discussants was, "How do you relate the changes in the population as determined by the survey or other data to the impact of a specific plan?"

As previously indicated, the absence of an accumulation of health service data on a community or population basis makes it not only difficult to measure a plan's performance in meeting its objective of improving the health of its members, but also makes it difficult to relate changes to any plan's medical care program. The series of studies being conducted in the area surrounding Harlem Hospital is an attempt to gather baseline and subsequent comparative information. Although a small on-going survey of several hundred families, sampled from a population of 400,000 people, is conducted monthly, the survey data for a two and one-half year period are not sufficient to point out factors which might be used as crude measures of the impact of the program on the population.

Once again the issue of how to evaluate the impact of a specific plan on the reduction of hospital admissions was discussed. The difficulty in using hospital rates from Blue Cross or commercial insurance plans as a yardstick, and similar difficulties in using rates from Medicaid data, were reviewed. The problem cited was that the present record system is not geared to providing data on a population base. For instance, most Blue Cross plans can give a count of the number of contracts in force, but for purposes of measuring utilization the number of contracts is a poor unit for analysis. Until the conceptualization of the need to be able to count the total number of individuals in the plan at risk of being hospitalized becomes universal, the group concluded that for comparison of hospital rates and other rates relevant to patient care HIP and Kaiser Permanente will continue to be a basic source. However, for the kind of evaluation desired by the group, special studies will be necessary to obtain information on use of hospitals by persons in the university medical care plans. To study the impact of various forms of providing health care or methods of payment on the incidence of hospitalization, it is necessary to know the extent to which persons covered by the plan use hospitals. This information must be obtained either directly from the hospitals by special arrangement with the medical care plan or from a centralized file. However, at present such a system is the exception rather than the rule due to the difficulties already mentioned.

If there are numerous hospitals in the area, it is easier to use a centralized file than to make separate arrangements with each of the hospitals. Another advantage to a central source of information is the ability to estimate the extent to which persons go outside the plan for hospitalization even though it means out-of-pocket payment by the individual.

In addition to looking at hospitalization, administrators are looking at other aspects of medical care processes within their plans to assess the effectiveness of the program. Special studies involving surveys or other methods may be required for examining such issues as the impact of the plan on severity of illnesses, disability days and impairment, continuity of care, patterns of referral, satisfaction, and the use of services outside the plan. Although most of the plans indicated some type of initial survey and a few discussed periodic sample surveys, the high cost of collecting, tabulating, and analyzing the data received much attention.

## SATISFACTION

Participants spoke of the problems involved in measuring patient and provider satisfaction. Measures such as: waiting time, broken appointments, failure to follow through with referral or medication, and compliance with prescribed regimen were discussed; the hypotheses being that if the plan members are satisfied, there will be fewer broken appointments or better compliances. In essense, these issues could be used as some indices of satisfaction. However, as Mr. Axelrod noted, there was limited information in the preliminary descriptions of the university plans about how they intended to look at the issues of attitudes, behavior, compliance and satisfaction of patients. A major problem is the difficulty in conducting a detailed study of patient satisfaction on a routine basis. Although the record keeping system gives an indication of the efficiency of operation and offers some clues, such as appointment status, referrals made, number of persons who have not used the plan, special studies are required because the degree to which any of these indicators really reflect patient satisfaction is not known.

The group discussed the possibility of using some form of direct questioning or survey mechanism. It was pointed out that numerous experiences in the use of satisfaction surveys with large groups, such as the California State Employees and the enrollees in HIP, repeatedly show a high proportion of satisfaction among members, but these are broad surveys about the general satisfaction response, and they do not supply data about satisfaction in specific situations. It may be useful to approach the issue by looking at the components of care. In this way one has an opportunity to get at possible sources of discontent. Key issues explored by the group were: 1) how to interpret the percent of satisfaction, and 2) how data on satisfaction are to be used. Several important operational uses for such data were detailed in the following manner: 1) to alert the system to the difficulties in which it may become involved, 2) to alleviate problem possibilities, 3) to demonstrate need to link behavior of individual and measures of satisfaction on an epidemiological basis, 4) to provide data for management decisions such as increase in manpower, change in time schedule, or number of hours the facility is open.

It was agreed that some form of direct questioning of members could be useful in learning their attitudes toward specific components of care and could provide critical data for use in operational decisions. In such plans as the Medical Care Group of Washington University, or in others where there is a control group, results of patient surveys can be related to the characteristics of the respondents and to their specific kinds of medical care experience. In this way, physicians and administrators can learn what particular practices are liked or disliked by particular types of patients.

The design of questions which will accurately reflect patients' reactions to the conditions under which they receive their medical care is, however, particularly difficult. Patients often view the medical care process along three quite separate dimensions: its acceptability; its accessibility; and its availability - or to use another frame of reference: the cost and convenience of the process; the perceived quality of professional and technical activity; the humanity with which care is rendered. Patients also have different expectations and different criteria by which they judge "good" care. For example, people in some subcultures want privacy; for people in others, care under such conditions might be considered isolated and unfriendly; for some, care is believed inadequate if no medicine is given; for others, if no x-ray is taken. In addition, patients may be reluctant to state their true feelings in fear of reprisals should their answers become known.

Many of the university groups indicated that channels are open to bring consumers' views directly to the policy-making levels. Consumer representatives should work with the plans to develop criteria by which to measure feelings and attitudes about the medical care they receive and to review methods proposed and questionnares to be used by the plans in conducting necessary studies. Not only is there a need to measure consumer satisfaction, but there are also needed methods to measure the administrative and professional aspects of the plan which affect satisfaction among staff. The scales generally used to assess satisfaction are limited and need to be reviewed, refined, and tested. After criteria for measuring the components of satisfaction have been developed and validated, the plans will need to develop a comparable method for collecting specific information and applying these scales to their own data.

## NATIONAL IMPLICATIONS

The lack of adequate health data accumulated over a long period of time makes the question of measuring performance of the plans quite difficult.

There are relatively few statistical series, other than mortality, in the health care system which can serve as indicators upon which to build valid evaluations. The National Health Survey has been available for approximately fifteen years, which is actually a very short time span for producing anything except crude measures.

However, as efforts are made on the national scene toward restructuring the health care system to make it more responsive to the needs of the people and toward changing the mechanisms for financing health services, some form of evaluation and accountability will be required. The general rules have been set forth. There is need, the participants concluded, to review the proposed plans to determine if there are opportunities to reflect the requirements of the population: 1) in various measures of utilization collected on a routine basis for purposes of management control, and 2) in special studies designed to assess the significance of the proposed programs within the fabric of the total health care system.

# OPENING COMMENTS ON OUTCOME MEASURES

**Sam Shapiro**

Within the framework of this Conference, it would probably be most useful to view the subject of outcome as focusing on the measurable effect that a health care system, either in its entirety or in selected components, has on some aspect of health or well-being or on health care behavior generally believed to be associated with an end result. Under other circumstances, a discussion of outcome might include the impact of a health care system on utilization and cost but these elements are being taken up separately.

Implicit in the issue of outcome is the need to make comparisons. This may be directed at contrasts between the system and another setting or between alternative methods within the system or it may involve change in the system. The methodology may take the form of an experimental design or a comparison between groups with definable characteristics; observations may be longitudinal, cross-sectional, or of the before and after variety; sources of information may include health service records, special medical examinations, interviews (household or at the health care facility), mail and telephone surveys; the measures may be mortality, morbidity, impairment and dysfunction in various manifestations, attitudinal; with the approach ranging from highly targeted, specific measures of a particular disease or condition to summary indices.

The extent to which specific plans or ideas have been developed by the University based plans varies widely but a commitment to outcome studies is stated by each. I want to explore this interest from several standpoints. First, there is the matter of perspective. Necessary as outcome information is, a considerable amount of humility has to be exercised in laying out a program. The studies that have been conducted or are in progress are, for the most part, well known to you–perinatal mortality, mortality among aged Welfare recipients, evaluation of automated multiphasic screening, effect of periodic breast cancer screening on mortality and two or three other projects. The list is not long, in part because of the relatively low degree of commitment to outcome studies until recent years, and in part because of the difficulties in structuring sound research in this area. These difficulties will continue and will discourage efforts to measure outcome unless a long view is taken.

Special, well-designed studies can and should be initiated; they will have a life cycle dictated by their own requirements. But, my reference to "long view" is related to another kind of consideration. This is the desirability of laying down the basis for routinely recording and systematically retrieving data relevant to outcome. Just as the utility of patient encounter information for a particular plan is most directly felt by the plan's management, so outcome data of even a rudimentary nature can strongly influence decisions within a plan. Further, just as utilization rates arrayed for several of the plans broaden the value of the information by displaying differences and similarities and directing attention to responsible circumstances, so a series of comparable outcome data for a number of programs could suggest the presence of an "effect" that is common to the plans and differences that might be investigated.

What are some of the measures of outcome that might become part of a recurring series? Considerations in answering this question follow: the item should either be clearly an end result or generally accepted as a requirement for a desirable end result; the item should be already accepted by providers of service as necessary record data or a convincing case be made for its entry; the item should be easily defined and reasonably reliable; and the item should be readily retrievable from existing records in the plan or in another agency. A list of items that might be candidates for inclusion are:

1. Maternal and infant care–stage of pregnancy when prenatal care starts; complications of pregnancy and their control; prematurity and perinatal mortality rates; postpartum care and family planning instruction and adherence.
2. Children–immunization status; pneumonia; otitis media; complications of communicable diseases.
3. Adults–stage of disease when diagnosed (cancer, diabetes); complications of respiratory diseases; rates of controlled and uncontrolled chronic diseases, including hypertension, ulcers, diabetes, congestive heart failure; allergic diseases and extent under control; mortality.

This enumeration is incomplete particularly for plans with heavy concentrations of selected segments of the population (indigent, aged) and there may well be differences of opinion regarding feasibility or the significance of particular observations. Also, the items cannot conveniently be summarized into indices. However, they do represent a start in describing movement consistent with the goals of medicine and can provide the platform for intensive studies directed at effects on functional status and disability.

The approach described would have consequences on the scope of population characteristics for which data have to be available. Age and sex, the usual items covered in the enrollment process, would have to be supplemented by some measure of socioeconomic status and in many plans by ethnicity and color.

Medical chart information would have to be organized in a far more systematic way than is true today, whether computers are used or not. But, this is really not a new thought. The work that Weeds has been doing in devising a problem oriented record is paralleled by others concerned about the need to improve the quality of record information. The start of new programs provides an unusual opportunity to link these efforts to the retrieval of data for outcome measures.

It would be a delusion to believe that a practical working record, no matter how complete it is, could ever do the whole job of assessing outcome. The record could not be relied upon to contain the details required to measure functional status, for example, even for those conditions under active medical care. Effects of conditions that do not come to medical attention at all or are under care outside the system, and attitudes towards and satisfaction with the delivery system would, of course, be lost if records were the sole source of information.

# CRITIQUE ON OUTCOME MEASURES

**Lester Breslow, M.D.**

At conferences on health and health care which are so popular these days, two items are commonly mentioned in juxtaposition: (1) infant mortality in the United States is substantially higher than in several other countries, and (2) the United States needs better health care, in particular improvement in health care delivery. The juxtaposition of these two items usually appears intended to convey the notion that if we improve health care we will lower infant mortality.

## HEALTH CARE AND OUTCOMES

There is some evidence that different arrangements for health care are associated with differences in infant death rate. For example, studies of experience under HIP several years ago showed that infants born with medical care under that plan had lower mortality than infants cared for under other medical care arrangements in New York City. Selectivity, however (families with greater health sensitivity might have favored the HIP plan) conceivably could have accounted for some or all of the difference. Factors other than medical care clearly do influence the infant mortality rate. Thus in California in 1967, there were 30.1 infant deaths per thousand live births among the blacks, 18.8 among whites, 15.8 among Chinese and 13.2 among Japanese. Such substantial differences in infant mortality among the racial groups in California do not appear explicable by differences in medical care among these various groups. What data there are suggest that education rather than medical care may be an important factor.

The frequently presumed relationship between the overall health of a group, for example, as indicated by infant mortality, and the medical care of that group is subject to challenge. Evidence on the point is difficult to find. There are data, of course, indicating the value of some specific aspects of medical care, such as immunization against certain diseases, the cytology test for cancer of the cervix, and antibiotic therapy of pneumococcal pneumonia. The claim, however, that one kind of arrangement for medical care is significantly better for general health than some other kind of arrangement is hard to justify, no matter how commonly it is repeated.

Another presumed favorable outcome of certain arrangements for health care delivery, mentioned at this Conference as in most discussions of the matter these days, is that hospital use is lower with certain arrangements for medical care than it is with other arrangements. It is often implied in this connection that it is desirable to reduce hospital use. In the limited sense that decreased hospital use generally means that health care overall is less costly, some advantage is gained. But is low hospital use good for the patients? Take the case of hospitalization for maternity care. During a recent period, in California the average hospital stay for maternity care was two to three days, in Massachusetts three to four days, and in London six days. Which is preferred? From the standpoint of saving on hospital care, California has the most favorable experience. Is saving on hospital care, however, the most important criterion in this matter? How the mothers and children fare under the varying patterns of maternity care may be a more significant criterion.

The relationship between health care and its intended and actual outcome appears to be rather poorly delineated. It is obviously essential in the evaluation of health care to specify the objectives of the health care and the means of determining whether these objectives have been achieved. Improvement in, or maintenance of, the health of a defined population is only one of several objectives of health care. If serious about these several objectives, it is necessary that we endeavor to evaluate them all. It may be possible to combine the evaluation of several objectives, as suggested in one paper here, for example, combining outcome in the sense of end-result of medical care with certain processes of the medical care with which outcome is closely linked, such as patient satisfaction.

## VARIOUS OUTCOMES TO BE CONSIDERED

In approaching the evaluation of health care, several possible objectives deserve attention.

On perhaps the most primitive level, patient satisfaction with the care needs consideration. The attitude of people towards physicians and other elements of health care today has evolved from the earlier attitudes of people toward healers in general. Popular expectations of care, whether ritual dances for the excoriation of demons, prescribing medicines, giving "shots", employing certain laboratory procedures, or spending time with the patient, form the basis for patient satisfaction. This is a matter of considerable consequence. The arrangements for and processes of health care must somehow respond to patient expectations and hopefully satisfy them, at the same time possibly seeking to change the expectations. Perhaps most important, the degree of patient satisfaction probably influences the way in which the person will subsequently use health care. A substantial part of the so-called "hard core resistance" to certain medical procedures may reflect adverse experiences with health care earlier in life. All of the helping professions, including the ones devoted to health, are finding it necessary at the present time to devote greater attention to the matter of client satisfaction.

A second type of outcome of health care, which can more readily be measured is the reduction of specific mortality and specific morbidity. For example, one can measure mortality from cancer of the uterine cervix, or the rate of discovering the disease in an early versus a late stage, under different patterns of health care. Neonatal mortality and many other indices can be used to determine whether one arrangement for health care yields a different outcome than another arrangement. It is also possible to measure the frequency of specific preventable diseases, such as rheumatic fever, measles, or middle-ear deafness, in population groups served by different patterns of health care.

A third possible outcome of health care is health in the generic sense, that is, physical, mental, and social well-being. Several efforts are now under way to define this concept and develop a quantitative approach to it. One view is that health may be regarded as a spectrum, along which any individual can be placed according to certain indices of physical, mental, and social well-being. In one paper at this Conference this type of index has been called a health impairment burden.

Another way of getting at the outcome of health care, in the sense of a direct result on the people served, is to measure the development of specific health reserves. Among these may be mentioned immunization against particular communicable diseases, lower blood pressure rather than higher, lower blood sugar rather than higher, and level of respiratory function. The future of medical care may very well rest upon a major shift in emphasis from the current complaint-response approach to health care over to a health-maintenance approach which would be measured to a considerable extent through such indices of health reserves.

One rather subtle and usually overlooked outcome of health care is community morale. For example, one outcome of the Salud Clinic in Tulare County, California, which drew local people into a health care service where no health service had existed before, was an apparent improvement in community morale. The latter was evidenced by the establishment of a newspaper initiated by clinic personnel and involving others in the community, by the growth of a community social center, and other changes in the life of the community. Possibly the impact of the so-called "free clinics" will be far beyond the treatment of venereal disease, drug abuse, and unwanted pregnancies; it is possible that an even more important outcome may be the influence on the morale of the youth groups that are rallying to the "free clinics."

In considering the outcome of health care on the health of the population being served one cannot, of course, overlook the paradoxical effect resulting from iatrogenic disease. As the power of medicine becomes greater, this aspect of the matter may well become more important.

## SOME COMMENTS ON METHOD

The above reflections on outcome of health care occurred to me in reading the discussions of this topic in the papers for this Conference. In addition a few comments on method may be appropriate.

A major point is that any consideration of outcomes should focus on the whole population for which the health care is intended. While this may seem elementary, it is the most often neglected element of the situation. One cannot depend upon the usual health service record system as an adequate basis for determining outcomes, because the usual health service system does not reach all of the people for whom it is presumably intended and therefore no records of health care exist for some of the population in the typical system. Completion of the outcomes picture requires information about the entire population, both the segment which uses the health service system and that which, for whatever reason, does not.

Evaluation of health care often requires longitudinal studies. One usually wishes to know whether there has been any change in the situation and this, of course, requires observations in at least two and preferably more points in time.

Also in measuring outcomes of health care it is necessary to give attention to influences other than the arrangements for health care. For example, the number of hospital days used by a population is affected not only by the physicians who prescribe the hospital care, but also by the number of beds that are available for use, and by the methods of payment for the hospital care as well as the methods of payment for the physicians. In measuring health on the basis of disability days, that is, time lost from work, one must take into account the fact that different groups have varying benefits for time off as a condition of their employment and these groups may use the benefits to varying extents at different times. As an extreme example, a study of postal workers' disability in recent times would have been confounded by their policy and action to obtain a raise in pay.

Still another common difficulty in studying the outcome of particular arrangements for medical care, such as multiphasic screening, is the problem of the "contaminated" control group. One may set out to compare the outcome in a population which is given a certain procedure with the outcome in a carefully selected control group thought not to have the procedure, only to find that the procedure which is being evaluated is by no means complete in the study group, and, as time passes, it is more and more taken by the control group. The comparison thus becomes rather blotchy.

One final point is becoming clear. As the nation devotes more of its total resources to health care, the demand for rigorous evaluation of what is being accomplished by the expenditures will rise. It is timely, therefore, for those concerned with the technical aspects of such evaluation to get on with the task.

# DISCUSSION ON MEASUREMENT OF OUTCOME

## Chairman: Paul M. Densen

The evaluation of outcome—of a new system of delivery of care or of a new treatment for a specific ailment, for example—is today considered an integral component of the process eventuating in the outcome. The meaning of the word "outcome" would seem to be clear, but outcome as a concept has many facets which call for review and discussion, particularly in the context of this conference. Indeed, the word itself raised questions in the minds of some people, and other terms, such as "end results," were suggested, but the participants concluded that the term " outcome" or "outcome measures" was acceptable.

The definition of outcome that set the stage for discussion was "the measurable effect that a health care system, either in its entirety or in selected components, has on some aspect of health or well-being or on health care behavior generally believed to be associated with an end result." Several principles follow from this definition as corollaries.

As an initial step in the evaluation of outcome, a clear determination has to be made of why it is that something is being measured. Put another way, a determination is required of the purpose in mind for entering certain information in the medical record or for undertaking some special study. As examples—and these have become more or less standard examples—is it a goal of the Plan to reduce hospitalization? to reduce costs? to increase membership satisfaction with the Plan? Does the Plan wish to find out if its ministrations are in fact reducing mortality, morbidity, disability? The Plan may, of course, have multiple objectives.

The participants agreed that if the findings about outcome are to have any meaning and any reliability, some rules of organization and procedure need to be observed. In the main, these are much the same rules as would be followed in any scientific research endeavor. First, the form of the outcome has to be known; that is to say, the subject matter under scrutiny has to be such that it is appropriate to the problem whose resolution is being sought, albeit sometimes indirectly. At the other end of the methodology spectrum: the data must be valid in the sense that the influences or conclusions drawn from them will be warranted.

Second, the effect must be measurable. Thus, if a putative reduction in hospitalization is being investigated, records should provide the number of admissions and the number of days in the hospital. If a reduction in morbidity is the hypothesis, measurement may prove more troublesome, for there intervene questions and doubts about reliable diagnosis, questions about the presence and severity of illness, and other questions of the same nature. Nevertheless, quantifiable information must be found and agreed upon, and terminology delineating the type of data being retrieved must be as specific and clearly defined as possible.

Third, evaluation of an outcome implies some kind of comparison, otherwise how can it really be known that anything has been achieved–that hospitalization or surgery has indeed been reduced or morbidity mitigated. One method of comparison is the before–and–after model. The Plan compares later data, obtained a suitable interval after some procedure has been instituted and when results are available, with the situation before the new procedure was begun. A common practice is to compare the outcome observations with data for a general population, federal, regional, state, or local, but this is hazardous since the probability that like is being compared with like may be small. Better comparison is made with another system serving the same kind of population and providing similar services but with such marked differences as a different method of payment (prepayment versus fee-for-service) or organization (group practice versus individual practice). To put it somewhat technically, the two populations should be alike for all variables, but the one under test or scrutiny.

The best comparison is made where a population or membership can be divided into two (or more) groups by some random process, one group constituting the treatment group, the other the so-called control group. This method still raises a few questions, however. One is the moral question of holding back beneficial service, home care, for example from the control group. Another is the well-known phenomenon that, over time, control of the control group deteriorates as its members obtain the services being tested, grow weary of cooperating, or move away.

Population has now been mentioned several times. If the outcome of a service is to be measured and evaluated, it should not be tested simply in terms of the patients receiving it; for true measurement of its effectiveness–and because health care systems are more and more assuming responsibility for the health of a defined population–the service needs to be considered in terms of the population from which the patients are drawn, usually the membership of a Plan. Counts of visits tell little about utilization of physicians' services–whether there have been too many visits perhaps (overutilization) or too few (underutilization); to make comparisons which lead to judgments, utilization rates are needed. Rates require a numerator, the number of events (visits), and a denominator, the number of persons among whom the events could occur–or who were exposed to the "risk" of having these events happen to them.

There are times, however, when outcomes have to be analyzed without a population base or denominator. The results of some efforts, like providing transportation or a playroom for children, can still produce a noticeable and measurable increase in utilization, which fact can have useful administrative applications.

If two or more populations are being compared, they need to be as alike as possible in their composition and characteristics. But even within the same Plan, there may be more than one class of membership (Medicaid and an employed population); for reasons of reliability, it may be advisable to treat the Plan as, in effect, two Plans in the evaluation of outcome.

Outcomes as they are related to a population cannot be analyzed apart from other elements of health and life. By and large, they should be evaluated against the background of environment, community custom and morale (in the sense of the lift produced among people by the establishment of a neighborhood health center), such factors as nutritional status, and so on.

The participants cautioned that one should not be misled by such easy assumptions as that patients are following their physicians' orders. In other words, one should be as certain as he can that the outcome and the procedures to which it is attributed have a reasonable relation to each other. Outcomes are also affected by the way the services in question are offered. And one needs to ask whether an outcome such as the reduction of hospitalization is indeed a favorable outcome. By the same token, it may be unwise to claim too much if outcomes are favorable. More time might be devoted to the study of the effects of factors such as those cited in this paragraph.

Data for the measurement of outcomes are usually obtained in one of two ways: from routine records, such as medical records, or special studies. Routine information that will permit the measurement and evaluation of outcomes must be planned for, in terms of both its inclusion and its analysis. Many such items, probably the more reliable ones, have already been listed in the critique presented by Mr. Shapiro. The criteria for their selection are also enumerated. Thought might be given by some agency or collection of agencies to the development of a basic data set along these lines.

Other items which have been put forth for inclusion, such as days of disability and days of illness, are flawed by their subjectivity; they are difficult to count meaningfully, particularly in low-income populations where few may enjoy sickness benefits and must, in a sense, disregard aches and pains. Once again, the population—including at least its age and sex composition—must be known so that rates can be calculated and used for purposes of internal administration, for planning and for comparison.

Despite the best of intentions, routinely collected data do not always supply all the desired information for measuring outcome (nor should they be expected to). This is particularly true in those milieus where innovation is stressed: where new procedures (administration and treatment) are tried, where research is emphasized. Not all Plans may be equipped to undertake the special studies they would like to, because of their small size (many phenomena require sizable populations if significant differences are to be detected), lack of appropriate research-oriented personnel, even lack of physical space. But for those organizations with the capacity and will for research, grants from various sources are available to encourage and support their efforts. As was already indicated, if a Plan does embark on a special study, careful attention has to be paid to the design of the study, its operational procedures, and the precise nature of the information to be gathered.

Finally, the participants concluded that studies–routine or special–should not be confined to that subject matter which investigators know how to measure. Granted that it will never be possible to measure every factor in a health care system, attention needs to be given to developing new measures in new areas.

# COST ANALYSES AND DATA NEEDED FOR A BETTER APPRECIATION OF CHOICES IN THE PROVISION OF MEDICAL CARE

**Paul J. Feldstein, Ph.D.**

In order to specify the type of cost data that should be collected within each of the plans, it is first necessary to specify the purposes of having such cost information. This is an essential first step. If the purposes were not specified, then when it comes time to analyze the data for such purposes the relevant data will not be available. Similarly, just to collect cost data on everything at every point in time is very expensive and presumably we are subject to some budget constraints (although based on previous data collection efforts in the health field it may not appear so).

Before turning to the type of cost analyses to be undertaken, I would like to make a few comments on the general subject of "costs." Basically, why are "costs" important? In most of the plans presented, there is little or no attention paid to this subject. In some cases it is ignored while in others it is handled in such a manner as to be best left to accountants and other technicians while the managers and conceptualizers of the plans can be left to work on the really important problems.

If this is the case, then the accountants will develop that cost information which best serves their own purposes, e.g., a balance sheet and "profit and loss" statement, rather than prepare the type of cost information that will serve the needs of the managers.

The apparent low priority given to cost analysis is, in my opinion, distressing since the subject of medical care costs have been and are currently of major importance in the provision and financing of medical care today. Unless proper attention is given at the beginning of these plans to the type of cost analyses that should be done, I believe the knowledge derived from such plans will have less of an impact than is hoped for.

Costs are important because, together with other factors, they help us to make choices! Are new forms of organization worth it? Is the marginal value from certain changes in benefits, higher quality, etc., greater than the marginal cost of such changes? Unless the right questions are asked and the relevant cost information available to answer them, our choices may not be as good as they could be and unfortunately, potentially good ideas may be incorrectly evaluated.

Although this paper is primarily concerned with explicit costs to the University Medical Plans, there are other costs that are involved in the delivery of medical care of which the managers should be aware in making choices. Minimizing the costs of producing medical care in an institutional setting may shift some "costs" to the patients, their family and visitors. Examples of such costs are travel and inconvenience. Although it is more difficult to quantify these latter costs, they should be considered in determining the type of organizational frame work for delivering medical care. By knowing the explicit costs of different systems, it will be possible to make better choices with regard to these other implicit costs.

## THE MEASURE OF OUTPUT

In order to undertake cost analyses, it is necessary to be able to relate costs to some measure of output or outcome. This is perhaps one of the most difficult aspects of cost analysis in the field of medical care. All of the plans discussed have multiple outputs or objectives. They may believe that it would not be appropriate to make cost comparisons between the plans. However, as soon as some of this data becomes available it is inevitable that comparisons will be made, and the persons making those comparisons may tend to neglect differences in the plans' objectives because the costs were not separated by each objective or output.

It is, therefore, in the interest of each of the plans to be able to specify, in a manner that would enable data collection, each of their outputs. Further, once such outputs have been enumerated, all costs should be allocated on the basis of each of these outputs. The measures of output are important because they suggest the bases for allocating costs.

Output, for purposes of inter-plan comparisons, is defined to be a treatment for a particular diagnostic category, of a specific level of quality (which might perhaps empirically be defined as the probability of a successful outcome).

Costs per treatment between organizations, therefore, must consider differences in the treatment (or diagnostic) mix as well as differences in the level of quality. Other factors affecting cost differences will be discussed, but in defining the cost per unit of output to be measured, it is probably necessary to be able to cost out differences in the level of amenities, to treat different diagnostic categories separately, and to adjust for levels of quality.

If the above data were available, it would then be possible, presumably, to examine the relationship between the additional cost of higher levels of quality and the marginal benefits of moving to these higher levels. (The relationship would presumably be nonlinear.)

Since the measure of output is so important, because it suggests the type of cost and medical data to be collected, I would like to make one further comment in this area. Although we are ultimately interested in "health," the provision of medical care is only one factor influencing health levels. Therefore, if health levels are considered to be the output of a plan and comparisons are to be made between plans on these grounds, then data on the other inputs affecting health, e.g., housing, nutrition, personal health habits, etc., would also have to be collected and introduced into the analysis. Although worthy, this is a much more difficult task, and, based on the material received does not appear to be the output measure indicated by the plans.

## THE USES OF COST ANALYSIS

There are several types of cost analyses, differing in their purposes as well as the type of data needed to conduct them. For both internal (i.e. whether costs are minimized) and external decision-making (i.e. comparisons of the performance between several organizations delivering medical care), the following kinds of cost analyses should be undertaken: the extent of economies of scale for long-run minimization; optimum input mix for minimizing short-run costs.

If data were available to conduct these types of analyses, then we would have the necessary knowledge to do the following:

1. Set up a Cost Control System by diagnosis, by department, by physician and by institutional setting;
2. Be able to forecast future expenses (by provider, diagnostic category, and physician) given changes in the patient or diagnostic mix, changes in prices and wages, etc.;
3. Determine that mix of resources that is least costly for providing treatments and how the optimum mix of resources will change if there are changes in their wages or prices;
4. Determine the scale of operation (for the entire treatment as well as for the individual settings) that is least costly, i.e. economies of scale. Hence the ability to determine "make or buy" decisions in all phases of the operation;
5. Have the information necessary for setting prices for the care received and also for determining premium levels on a capitation basis;
6. Determine the causes of variations in costs between different plans or organizational forms of delivering medical care;
7. Determine the "profit and loss" at different levels of operations, with different types of patient mix, and how profit and loss would change, given changes in any of the underlying factors affecting costs;

8. Provide part of the necessary information required to conduct cost/benefit analyses of specific programs offered by the plans;
9. Serve as a basis for incentive reimbursement experiments.

This would have to be a much longer paper for me to describe in detail the importance of each of the above uses and how specifically each is to be achieved. Therefore, I would like to discuss for purposes of an example, only one of the above, the importance of knowing the extent of economies of scale.

## ECONOMIES OF SCALE

The economist is interested in knowing the extent of economies of scale in an operation, i.e. the relationship between cost per unit and size of operation. Presumably a plan with a small volume (e.g. 500 families) may have very high costs per family per year, not because it is inefficient or producing high quality care when compared to another plan, but because there are certain economies in providing medical care in a comprehensive group practice setting that are achieved when the plan size enrollment reaches e.g. 30,000 families per year. For example, it is important to know what the relationship is between cost per family (or person) per year and plan enrollment. If there is a sharp drop in per unit costs with increase enrollment, then this size factor must be considered in making comparisons between costs of different plans. Further, if price is related to cost, then the ability to operate a larger scale may determine the financial success of a plan, e.g. per unit costs may be so high in a small plan as to discourage additional enrollment, whereas if it were known that per unit costs would fall a certain amount with increased size, then the additional enrollment could be sold at this future cost.

Related to the overall problem of economies of scale for the entire operation of the plan, which as described above would be necessary knowledge for establishing (and predicting) a premium for enrollment in the plan, is the use of the same idea within the plan for the operation of various services and operations.

The extent of economies of scale are not the same for each service or facility. A plan of a given size may experience large economies of scale in the use of certain facilities or operations while at the same time be subject to either diseconomies of scale (too large) or have high unit costs in other operations because of the nature of the cost-size relationships in those other facilities or operations. It is important to be able to have cost/size data on all aspects of the plan's operation so as to know where possible savings may accrue. For example, a plan with a small enrollment may determine that in certain operations it could purchase these services from other organizations more cheaply than by providing it themselves.

Therefore each plan should collect data on the cost-size relationship of all its activities, as well as its overall operation so that this information could be used for:

- estimating the premium at different enrollment sizes;
- determining which facilities and services it should operate itself and when it is cheaper to buy such services from others (and similarly, when it is less costly to provide it themselves or the savings from doing it cooperatively with others);
- making cost comparisons with other plans (or methods of providing the same care) by adjusting for cost differences that are associated with size differences in order to establish cost differences due to other factors.

A further example of the kinds of other data that would be required (in order to hold their effect constant) in addition to data on economies of scale, e.g. volume, when making an inter-plan comparison of costs, would be: product mix of the plan, e.g. diagnoses; quality levels; population served, e.g. age, sex; and wage and price differences of resources.

Then, assuming an accurate allocation of costs (e.g. various activities such as training and research are not being subsidized) and adjusting for economies of scale, the differences between costs per treatment by diagnosis can be attributed to differences in efficiency of operation.

## TYPE OF DATA TO BE COLLECTED

In order to be able to conduct the above cost analyses, it is necessary to have certain types of both cost and non-cost data. The following framework indicates the ideal type of data to be collected.

*Data for Use in Estimating Production Functions:* A production function in economics is the physical relation between inputs and outputs. The output may be at various levels of aggregation, i.e. treatment of a diagnosis in a hospital setting to the treatment of a diagnosis in all settings–outpatient, inpatient, home care, etc. For each diagnostic category there are various inputs and combination of inputs that go into providing a treatment (at various levels of quality). Therefore, the first step in determining what is the economically most efficient method of treatment is to have data on the inputs (personnel by skill level and amount of each category of personnel, supplies, and capital) and the extent to which these inputs may be substituted for each other in providing a treatment for a diagnostic category (again of a specified level of quality).

Presumably the resources (labor and non-labor) used in providing treatments between each plan will not be the same, nor will they necessarily be the same within one plan over time. By collecting data on those different combinations of resources, and through various statistical techniques holding constant other factors, it should be possible to determine empirically the degree of substitutability of these resources for each other. Knowledge regarding the extent of substitutability provides important information, if we are to be able to select the least cost method of providing a given treatment.

*Data for Use in Estimating Cost Functions:* Given the above data, it is then necessary to have data on the prices of the inputs, e.g., wages of different types of personnel, prices of supplies, and capital cost. This data then, prices of inputs and amounts and types of inputs by diagnostic category, will make it possible to determine what is the least expensive manner for producing a given treatment, of given quality.

Once we have the above data, prices and amounts of resources, then we also have estimates of costs for producing treatments by diagnostic category. For example, if costs are related to all the outputs produced, e.g., x-rays, then it will be possible through use of the patient encounter form to determine the inputs that went into providing each treatment. The costs for each patient or episode of illness are then the costs of all the inputs indicated. We could then make inter-plan comparisons of the cost of treatment for a particular type of patient in a certain diagnostic category and determine the cause of such differences. Variations in costs might be a result of difference in the prices paid for the resources (wages differ by region) or of differences in amount of resources used.

Such specific data then, on prices, resources, and outputs can be used not only to make inter-plan comparisons, and suggest the reason for cost differences, but can also provide information regarding the extent of economies of scale, as well as being used for cost control purposes. For example, with the above information it should be possible to estimate the costs for producing treatments by diagnostic category (further classified by type of partient)–hence its usefulness also for budgeting future costs. If for a certain patient or for a certain time period the costs of a treatment are higher than is expected, it should be possible to determine the cause of the sudden increase. It might be a result of an increase in use of certain resources or possibly that there was a wage increase that month; therefore not necessarily a cause for concern that there is inefficiency in the operation.

The above data, i.e. types and amounts of each input, their prices and wages, the type and volume of output, are admittedly ideal. Many organizations may have difficulty in providing such information. As a beginning, however, the plans should attempt to allocate all costs to each output. The above refinements would then be a phase to work toward. Even though less than ideal, the ability to relate costs to output would enable a number of the above analyses to be undertaken. For example, it would permit, through the use of statistical techniques the separation of fixed and variable costs.

*Data for Use in Estimating Future Demands for Care:* Another set of necessary data, which are not cost data, but are relevant for determining future costs, are estimates of the demand for care. Unless there is some idea of the type and quantity of treatments that will be demanded (also of different quality levels), it will not be possible to accurately budget costs (resources) for serving those demands. There may be too many resources, which would be wasteful or too few–which also would be costly, e.g. the patients' outcome be affected in that they may have to have less care than if there were better planning.

To summarize the kinds of data to be collected, it is necessary to have data on prices for each of the resources used, the type and amount of resources used, categorized by treatments for each diagnostic category. Further, patient information should also be available for the above, e.g. age, sex, severity of illness, etc. The above data should be available aggregated for the entire health plan (i.e., episode of illness in all facilities) as well as within each of the institutional or facility settings in which care is provided, e.g. outpatient, hospital, physicians' office, nursing home, and even in the patients' home.

The above information will then enable comparisons to be made not only between different plans but for the same plan over time; also it should be possible to determine the extent of economies of scale in the entire operation as well as for each institutional setting; an estimate of efficiency can also be made–if quality and output can be sufficiently well measured; it should be further possible to institute cost control and budgeting procedures, and also to determine the premium for the plan's services based upon expected demands for service.

I have not been very specific as to exact types of data to be collected since one can get bogged down in estimating fringe benefits as part of wages, etc. But I have suggested that the data be collected in such a manner as to be able to relate it to treatments by diagnostic categories. This means price and quantity data on both human and nonhuman resources. Some resources do not vary (within short periods of time) regardless of the volume of treatments provided by diagnostic category, such as certain capital costs, while some resources do vary with the number of treatments provided. Both these "fixed" and "variable" resources are to be included. Further, although the emphasis has been on medical care output, traditional methods of allocating data to departments or cost centers would also be useful, for purposes of cost control and budgeting on those centers. But in order for costs to be useful for the other purposes described above, it is necessary to be able to relate the costs to patients of different diagnostic categories. With the present state of information systems and computers as well as patient identification numbers, this should be less of a problem in the future than it has been in the past, at least in those cases when it was not done for technological reasons.

## ADDITIONAL FACTORS INFLUENCING INTER-PLAN COSTS

In the above discussion of the purposes of the cost analyses and the type of data to be collected, several factors affecting costs were omitted which must be considered if comparisons between plans are to be made.

*Payment Mechanisms:* Each of the plans involved (or future plans) may differ in the method used to reimburse physicians (e.g salary, fee for service, capitation) or other providers of care (e.g. cost plus for hospitals). Differences in these payment mechanisms between plans may result in wide differences in the cost performance between plans because the incentives in how many resources are used in treatment and how well they are used may differ. In fact, if different payment mechanisms are not considered, then perhaps one of the most crucial factors influencing performance–incentives–may be omitted, and their effect attributed to other factors which would be misleading in their implications for future policies derived from these findings.

In addition to possibly differing incentives to the providers of care, the incentives to the demanders of care may also differ (e.g. extent of coinsurance and deductibles, benefit coverage, etc.), hence also possibly resulting in levels of utilization and utilization patterns–hence, costs– that differ between plans.

*Differences in Plan Output:* The plans involved (as well as future plans) differ with respect to other objectives, such as providing training, conducting research, and serving as the prepayment agency for the plan so that in order to conduct meaningful cost comparisons between plans and also for determining the costs for providing medical care it is necessary to separate out the costs of these other functions, or outputs.

If adequately sorted out, then similar analyses as described above can be conducted with regard to each of these other outputs.

*Experience:* If the various University Medical Plans believe that they will now be able to reduce medical care costs to their enrollees by about one-third because they now offer prepaid group practice, they will be in for a surprise. In addition to the higher costs that will be involved because teaching hospitals are being used, the higher premiums necessitated by being less than optimal size, the higher costs because it will be difficult to separate out their other outputs, e.g. research and training, there will be higher costs that are a result of being novices in operating a medical care plan. As experience is gained in delivering medical care, these latter costs will presumably decrease. Whether the other costs will similarly decrease will be determined by subsequent evaluation studies.

# DISCUSSION ON COST ANALYSES AND DATA NEEDED FOR A BETTER APPRECIATION OF CHOICES IN THE PROVISION OF MEDICAL CARE

### Chairman: Sidney S. Lee

There was general agreement among the participants on the need for more "cost information" in order to evaluate more adequately the various existing university medical care plans and to aid in the development and management of new ones.

However, a precise determination of the cost information to be collected in a health care program often proves to be an exercise in frustration. These attempts which are based on traditional methods of categorizing costs per unit of service fail to recognize the fundamental nature of the group practice prepaid concept; and any effort to apply classic economic theory presupposes a level of sophistication and discipline which simply does not exist in the health care field.

The participants suggested that the subject could perhaps be most meaningfully approached by considering the three primary prepaid group practice program needs, and then the kinds of cost data each requires. The three primary program needs are:

1. **Planning and Development** (i.e., determination of the operating and capital dollar requirements for a new program)

2. **Management** (i.e., prospective development of a program's financial requirements, on-going monitoring of performance, and allocation of alternative resources)

3. **Evaluation** (i.e., internal analysis of cost centers and external analysis, or inter-plan comparisons)

Before examining each of these areas in detail, the participants reviewed some of the basic underlying assumptions concerning the group practice prepayment concept, and the elements that seemed to contribute to its success.

The experience of medical care programs that have assumed responsibility for the primary health care of a population on a prepaid basis has consistently demonstrated the need for a number of elements to be operating in combination if such programs are to be, and remain, viable. Taken together, these elements contribute toward relating the financing and delivery of medical care in such a way as to relieve constraints against, and indeed provide an incentive towards, the provision of care in the most appropriate and efficient manner. These major elements include: benefit structure sufficiently comprehensive to provide a wide range of services, locations in which services may be rendered, and a variety of professional and paraprofessional staff to render these services; a financing structure sufficiently predictible and unrestricted to permit the development of facility and manpower resources for a defined population in such a way that alternatives to the use of the scarce (and costly) hospital and physician are encouraged; an organized group of health care providers who share patient responsibility; and management skills–medical and fiscal–to assure that these elements operate in the proper balance.

## 1. PLANNING AND DEVELOPMENT

The critical issues in the planning and development of a new Plan, from a cost standpoint, relate to the determination of operating cost requirements and capitalization requirements. Discussion followed on these points.

### Operating Cost Requirements

As suggested by the above principles, operating costs in a group practice program are most appropriately viewed per unit of population (as opposed, for example, to per unit service). This is so because of a basic objective in the prepaid health system, i.e., the use of the most appropriate alternative resource in maintaining health and treating illness in a population.

Cost per person is generally defined as the amount of money required to provide a given range of health services to an enrolled individual for a specified unit of time, usually per month. Under typical group practice prepaid arrangements, a subscriber (or a third party on behalf of a subscriber) pays such periodic, predetermined amounts to cover the cost of all, or most, of the services offered by the Plan. The Plan then assumes responsibility for using these monies to organize staff and facilities in order to meet most effectively the needs of its subscribers.

Perhaps the most significant advantage of capitation reimbursements to the Plan is the flexibility of such reimbursement arrangements in terms of what services can be provided, where, and by whom, in reaching toward the objective of providing care in the most appropriate fashion for a particular situation. This is in contrast to the more customary approaches of reimbursement for particular conditions, where care is provided in traditional settings by traditional manpower. The implications of this increased flexibility in delivering comprehensive health services are exceedingly important.

Prepaid plans have an advantage over OEO Neighborhood Health Centers, for example, where there usually is a lack of a denominator around which to build capitation reimbursement arrangements.

Linked with a comprehensive benefit structure and the availability of physical and manpower resources, a capitation reimbursement arrangement provides a powerful lever toward an efficient use of the elements of the health care system.

### Developing the Capitation

The mechanical process of arriving at a capitation is reasonably straightforward and probably consistent, with some variations, from one plan to another.

First it is essential to determine the level of membership to be served. This might be based upon such factors as size of potential market (and expected penetration of that market), availability of resources, and the optional size of an ambulatory facility. Most of the university medical care plans seem to agree that the optimal size should be in the range of 30-50,000. It is within this range that the most efficient use of staff and costly equipment (e.g., x-ray) can be achieved.

A second item is to develop a set of planning assumptions that set forth a given set of benefits and the utilization expectations (hospital days/1,000/year, physician services/person/year, lab and x-ray services/person/year, etc.), and staffing ratios (physicians, nurses, paramedical, etc.), required to deliver these benefits. There is a wealth of data available, from Group Health Association of America and specific group plans, regarding the utilization of specific services and the manpower required to serve a prepaid membership. These data tend to be rather consistent from plan to plan and provide a valuable resource for new programs in their developmental stages. Such other factors as productivity and scheduling must be considered if the overall assumptions are to be meaningful.

The planning assumptions must be converted into a budget. Assuming that the program does not own its hospital beds but pays for them as used, the hospital portion of the budget is merely the product of the projected hospital utilization rate and the estimated per diem cost for the period. The medical portion of the budget is more complex, requiring line-item detail for salaries, supplies, overhead and other variable items. The budget should be checked out by someone with experience in the fiscal affairs of similar programs.

The budget is converted into a capitation. This requires estimating the membership level at which it is "reasonable" to expect operating revenues and expenses to come into balance—the "break even point".

Determining an appropriate breakeven point is a difficult but critical operation, because capitations (and ultimately premiums) are generally based on the per capita operating cost at a breakeven level of membership, which Dr. Feldstein calls the "future cost": the per unit cost with increased size; or "economy of scale". The break-even membership level can vary, but it is likely to be close to the membership level for which the facility was designed so that the maximum contribution to fixed costs is made.

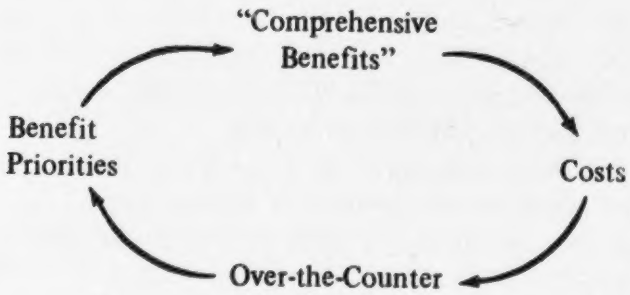
In considering the economies of scale and fixed variable cost, there are somewhat different views on the question of optimal plan or facility size. At what membership level are there economic advantages because of sheer volume? Is there a point of diminishing returns where added membership results in economic disadvantage? Not many years ago, 20-30,000 members was the rule-of-thumb size for a free-standing group practice facility. Today, some plans feel that 35-50, 000 members are required to support a facility. Generally speaking, a facility's size should be such that capitation levels can provide a maximum contribution to the Plan's "fixed costs". Radiological equipment, for example, is usually the most expensive element of non-personnel fixed cost. Whether through the amortization of purchased equipment or the rental cost of leased equipment, the annual cost of maintaining this service (usually requiring two units to accommodate high-turnover routine films and slow-turnover special films) would require the close to 35,000 membership level that such equipment could handle at capacity. Similarly, efficient utilization of the complement of staff, most particularly specialty physician staff, requires a membership level of about 30-35,000.

Beyond the 30-35,000 range, it would seem that the marketplace would need to have the potential to generate larger numbers with some degree of assurance and rapidity. Providing capacity (with significant components of fixed costs) for larger number of members thereby extending the break-even point, without the assurance of attaining such membership levels within a reasonable period of time, could stretch the Plan's resources and make solvency an elusive goal. On the other hand, a too-low break-even membership level, i.e., attempting to recover fixed costs more quickly, could price the program out of the marketplace.

**Costs vs. Benefits**

The design of benefit packages also requires considerations related to the cost constraints of the marketplace. Benefit levels should be sufficiently comprehensive to provide desired operating flexibility, but must also remain competitive.

Balancing the desirability of comprehensiveness with the market's cost constraints is a continuous feedback or testing process, generally resulting in the need to determine benefit priorities and/or elements of "over-the-counter charges" whereby various portions of health care costs are borne at the time of service, rather than through prepayment. This process might be diagrammed as follows:



The determination of capital cost requirements is fundamental to the development of any new plan. The estimation of and the identification of sources for, required capitalization are essential. Any plan's capitalization requirements will be of two parts: 1) start-up, and 2) facility. Start-up cost is separate from the "pre-start" or developmental planning costs which have been funded largely by public or foundation funds, or buried in other budgets.

### Start-Up Capital

By whatever name–start-up, inception or seed money–new plans require deficit financing to support operations until an adequate level of enrolled membership is attained. Determining the amount of required start-up financing is very difficult, but the experience of plans initiated over the past several years has demonstrated the necessity of providing for substantial standby amounts.

Projecting monthly membership levels, forecasting revenues based upon these projections, and determining the deficits from monthly expenses, provides a cumulative (but hopefully declining) picture of need. Opportunities for the introduction of staff and facilities, and/or the presence of fee-for-service revenues, are among a variety of circumstances that can serve to moderate the level of start-up requirements.

### Facility Capital

The costs for construction or rennovation of a facility, and for furnishings and equipment, become easier to estimate than the costs attributable to start-up. As in the case of operating costs, the experience of existing plans provides a wealth of data from which to draw. Specific facility costs will clearly depend upon local land values and labor costs, site characteristics, whether an existing facility is to be rennovated or a new one built, whether major equipment is to be purchased or leased, and similar considerations.

Where insurance carriers have been involved in the development of plans, their contribution toward these capital needs have ranged from token to substantial. If carriers are to play a meaningful role in the future of prepaid plans their making available front-end money for both start-up and facilities would represent a major contribution.

## 2. MANAGEMENT

It is often said that prepaid group practice most closely relates the financing of health care to its organization and delivery. These elements are the essence of the management process. The fact that they lack integration in the health care system at large must be a major difficulty in the lack of effective management in the system and most of its component parts.

Prepaid group practice not only permits effective financial management; it virtually requires it. Unlike more conventional health providers who can bury poor management by either increasing the volume of services provided to cover costs, or merely passing along the higher costs to permissive third party payers, prepaid group practices must operate within predetermined levels of per capita revenues. This has led to a variety of management and organizational disciplines which only effective cost systems can make fully meaningful. The participants then discussed the cost data required from the management aspects of health care delivery.

### Budgeting and Reporting

Any responsible organization operates on the basis of a budget. A prepaid group practice plan's survival depends on a budget that is carefully developed and consciensiously managed.

The budgetary process, in its broadest sense, is the essence of a plan's development and management. The budget is, after all, a quantitative expression of the major components of the operation. It includes the development of prospective line-item quantities; but also the on-going review, evaluation and correction of actual performance. Quite clearly the management of a program via a budget requires the ability to project costs relative to salaries, facilities, equipment, supplies, and all of the overhead and indirect cost items that are part of a comprehensive health service.

To be meaningful, actual costs must be generated on the same basis so that comparisons of actual to projected can be produced, variances highlighted, and corrective action taken if necessary.

### Allocation of Resources

In contrast to the overall cost objective of determining cost per enrolled member rather than cost per specified service, the appropriate management of resources *does* require the development of more detailed cost data for particular categories of cost; for, the specific management challenge of prepaid group practice is to maintain the flexibility to make the most efficient use of available resources or, to put it another way, to assure that in terms of what services are provided, where and by whom, care is delivered in the most appropriate fashion.

Most commonly, such cost considerations will become, together with various professional and social factors, a part of the process of determining whether the plan should introduce new categories of manpower, whether a patient should be discharged from a hospital early to an organized home health program, etc. Cost data will facilitate such "make/buy" decisions as whether to send out laboratory work rather than perform it in the center.

## 3. EVALUATION

It is tempting to allocate costs in a variety of ways so as to facilitate "analysis" or "evaluation". In a practical sense, however, there may be less need for on-going sophisticated costing in a prepaid group practice than in a conventional fee-for-service operation. For one thing, since reimbursement is not made on the basis of a unit of service provided, establishing with precision the "real" cost of providing that service so that it is fully recovered in its "price" is of little importance. Secondly, although economists would like us to develop precise measures of "output" or "outcome", in the health care field the outcome of a related cost often defies precise measure.

### Internal Analysis

The kind of resource decisions discussed, and particularly those of the "make/buy" variety, call for internal cost analyses. In most cases, however, this sort of cost data would be required only on a special study basis, not continuously. It will be necessary to allocate costs, but also to consider which costs will be fixed regardless of allocation (i.e., cost which will be incurred even if a service under consideration is not performed directly by the Plan) and which costs will be incremental.

The development of new benefits (e.g., prepaid drugs) and the per capita rates required to support them, requires the same analytical process. Other internal analyses, for which cost data would be required on an *ad hoc* rather than an on-going basis, would be the evaluation of a proposed incentive system, the introduction of automated screening equipment, or even such administrative alternatives as the size of an enrollment staff.

### External Comparisons

One of the great frustrations in attempting to evaluate the relative effectiveness of prepaid plans is the lack of data comparability. Virtually all plans recognize the need to standardize definitions and develop common cost reporting systems. This is a clear prerequisite for the determination of the causes of variations in costs among the different plans, or between prepaid plans and other organizational forms.

Finally, the participants concluded that in the future it should be possible to make comparisons among the various plans; for example, to evaluate the costs and effectiveness of the different university health care plans. However, a considerable amount of work remains to be done before that can be accomplished, because the participants noted that there is still a lack of common understanding about such items as defining what actually represents an "encounter".

# PART III:

# CONFERENCE OUTCOME AND PROPOSALS FOR ACTION

## DISCUSSION SUMMARY

### Chairman: Sidney S. Lee

A need to continue the exploration of major issues presented at the conference was discussed both formally during earlier sessions and informally during the recesses. At the final session, participants reached the general conclusion that an *ad hoc* working committee should be formed to develop comparable methods for evaluating the processes, outcomes, and costs of health services rendered by the university medical care plans. Each of the organizations agreed to designate representatives to serve on such a committee. This group would meet on a continuing basis to design a basic set of tables, and work toward agreement on a core set of data to be included in the basic record systems of the plans.

**Proposals for Action**: The tasks assigned to this committee are as follows:

A review will be made of all patient records and encounter forms, questionnaires, and other pertinent instruments designed by each plan for collecting patient data;

Each representative will submit a list of the information considered most important for comparative purposes. Some items will relate to information needed to evaluate how a specific plan achieves its own objectives; other items will relate to information needed to comparative purposes with other plans;

Based on the above information a set of dummy tables will be designated so that it will be possible to obtain statistical data on a regular basis for management and operational functions and to provide the flexibility needed to select specific data for special study. The dummy tables will be used as a means for developing comparable data collection based on common definitions and objectives.

The tables will be designed to allow for expansion of the data so that comparisons of other types of programs, i.e. OEO, 314E, or other health systems can be made. It was suggested that the committee explore the interest of these groups in participating in this effort.

These follow-up actions, for organizing and funding, should proceed as rapidly as possible. The committee should start work immediately before existing or planned record systems make the above tasks more difficult.

The Harvard Center for Community Health and Medical Care agreed to organize this effort and to seek funding for its support.

**Actions Accomplished:**

An *ad hoc* Working Group, composed of representatives from each of the plans presented at the conference and from other organizations responsible for medical care plans was formed. The National Center for Health Services Research and Development provided funding which made it possible for the group to meet over an extended time.

The initial task was to agree upon a core set of data which each member of the group would include in the basic record system. Such an approach makes it possible for each plan to take the following steps: establish comparable methods for data collection; obtain statistical data on a regular basis for management and operational functions; and provide a means for selecting specific data for special studies. A draft set of dummy tables was designed to elicit minimal information necessary for day-to-day operating purposes. The tables focus on 1) the characteristics of the population, and 2) the utilization of services. In discussions relating to the population tables, the group began to face the problems of developing a clear concept of the population to which each plan offers its services. The issue of denominators for the utilization tables prompted agreement among the group on the requirement that *enrollee* and *registrant* should be differentiated. In order to obtain systematic reporting from different medical groups, two similar sets of basic tables have been designed; one using the enrollee population as the base for computing utilization rates; the second using the registrant population as the base. This separation will enable plans with similar populations to compare data presented in the basic tables.

The group is working toward agreement on definitions of specific terms, classification issues, and on the recording and tabulating of certain procedures. The basic set of tables is in final draft; a draft of an encounter form for use with the tables has been completed. The tables and the encounter form are based on minimal information with the intent that any medical care plan could expand the collection of data, within the categories provided, to meet its own needs. A first draft is being prepared of a manual of procedures for the guidance of other plans and programs that wish to include, in their basic record system, the core set of data defined by the *ad hoc* Working Group in the tables and the encounter form.

# APPENDIX

1. Background Information on University Medical Care Programs
    - Columbia Medical Plan (Johns Hopkins University)
    - Community Group Health Foundation, Inc. (Howard University)
    - Community Health Care Center Plan, Inc. (Yale University)
    - East Baltimore Medical Program (Johns Hopkins University)
    - Harvard Community Health Plan, Inc. (Harvard University)
    - Medical Care Group (Washington University)
    - UCLA Community Health Care Prepayment Plan (University of California)
2. Issues and Problems Relating to the Organization and Financing of the Community Health Care Center Plan, G. K. MacLeod, M.D.
3. Excerpts from Issues and Problems of Marketing: Experience of the Columbia Medical Plan, W. F. Towle

**To obtain additional information about any of the University Medical Care Plans presented at the Conference, write to the Director of the Plan. Names and addresses appear in the list of Conference participants.**

## Background Information for Conference

## March 11, 1970

1. **Name of Medical Care Plan:** Columbia Medical Plan

   A) **Date Center opened:** October 1, 1969

      1. **Number of subscribers:** 450 members (150 families)

   B) **Date Center began providing limited services:** Not Applicable (NA)

   C) **Date Center began providing complete services:** October 1, 1969

      1. **Number of subscribers:** 450 members (150 families)

   D) **If Medical Center has not begun Medical Care Plan, please give approximate beginning date:** NA

   E) **Current date:** March 11, 1970 **and current number of subscribers:** 2609 (890 families)

2. **Co-sponsoring institutions:** Johns Hopkins Hospital and Johns Hopkins University (plus participating Insurance Carrier, currently only Connecticut General Life Insurance Company).

3. **Description of Corporate Structure and specify composition of Board and/or Administrative Unit:** Columbia Hospital and Clinics Foundation is a wholly owned subsidiary of Johns Hopkins University and Johns Hopkins Hospital, organized as a non-profit hospital corporation. The Columbia Medical Group is a physician partnership with the partners being the Dean of the Medical School and two Associate Deans of the School of Medicine. The Columbia Medical Plan is the responsibility of these two bodies and participating insurance carriers. The Board of Columbia Hospital and Clinics Foundation is composed of 9 Trustees appointed by members of the corporation who are the Joint Committee of Trustees of Johns Hopkins University and Johns Hopkins Hospital; 4 Trustees from the University, 4 from the Hospital, and 1 from the participating carriers.

4. **Please specify:**

A) **Population(s) to be served:** 1) Current number 2600. 2) Anticipated enrollment 30,000. 3) Characteristics, by age and sex, of current enrollees Males 43%; Females 57% 0-5 17%; 6-16 21%; 17-35 26%; 36-65 26%; 65+ 10%

| Sources of Funds | Type of Payment | Restrictions in Eligibility | Individuals Number Eligible | Individuals Number Currently Enrolled |
|---|---|---|---|---|
| Conn. Gen. Life Ins. Co. | Prepayment per capita | Geographical | 6500 Columbia population plus 65,000 in surrounding area | 2600 |

5. A) **Indicate organization(s) with major responsibility for obtaining subscribers (or enrollees):** Connecticut General Life Insurance Company

B) **Describe method(s) of marketing the medical care plan:** To groups through Connecticut General group sales offices, agents, and brokers marketing dual choice plan to employed groups.

C) **List the advantages and/or disadvantages in present method(s) for obtaining subscribers:** 1. Groups have natural coverage often with other carrier; 2. Multiplicity of employers with only few employees in area; 3. Supplemental approach is difficult administratively.

6. **Please state specific objectives of the medical care plan.**

1. To develop in a new city a medical care plan based on prepayment and group practice for all citizens of the City and surrounding area who elected to join.

2. To develop the plan that would be replicable as an economic health service package in other areas of the country.

3. To assure that the plan was developed in such a manner that the University's interest in teaching and research would not be compromised, although this interest would be developed within the limits of practicality.

4. It was necessary to assure that no undue financial risk to the Johns Hopkins University and Johns Hopkins Hospital occurred.

5. That the facilities and services provided in Columbia would be related to the University Medical Center in East Baltimore on regional basis.

6. To enlarge the concept of the Columbia Medical Plan to include community health services and education, as well as personal health services, and to build into the plan the capability of having major input into community mental health resources and other community based programs such as training of paramedical manpower in affiliation with local colleges.

7. To assure all potential members a true dual choice in medical care by encouraging other non-plan health providers in the area and, where practical, developing working relationships with them.

## Background Information for Conference

## March 1, 1970

1. **Name of Medical Care Plan:** Community Group Health Foundation, Inc. Neighborhood Health Center–A Group Practice Plan

   A) **Date Center opened:** December 8, 1969

      1. **Number of subscribers:** 250

   B) **Data Center began providing limited services:** December 8, 1969

      1. **Number of subscribers:** 250

   C) **Date Center began providing complete services:** Not yet available.

   D) **If Medical Center has not begun Medical Care Plan, please give approximate beginning date:** NA

   E) **Current date:** March 1, 1970 **and current number of subscribers:** 1,000

2. **Co-sponsoring institutions:** CHANGE–Cardozo Heights Association for Neighborhood Growth and Enrichment; Howard University; Group Health Association of Washington, D.C.

3. **Description of Corporate Structure and specify composition of Board and/or Administrative Unit:** (a) **Board of Directors:** 12 members–Howard University's School of Dentistry and Medicine, Group Health Association of Washington, D.C., and CHANGE, Inc. **Advisory Health Council:** 20 members–professionals who live in the community, ten enrolled consumers. (b) **Administrative Unit** consists of Project Director, Health Service Director, Administrative Services Director, Community Relations Director, Training Director, Research and Evaluation Director, all who report to the Project Director.

4. **Please specify:**

A) **Population(s) to be served:** 1) Current number 10,000. 2) Anticipated enrollment 20,000. 3) Characteristics, by age and sex, of current enrollees.

| Sources of Funds | Type of Payment | Restrictions in Eligibility | Individuals Number Eligible | Individuals Number Currently Enrolled |
|---|---|---|---|---|
| OEO | $1.8M Grant | OEO guidelines | Approx. 15,000 | 379 |
| Medicare | 80% of fee schedule after $50 deductible | Required guidelines | | 344 |
| Medicaid | $20 per visit fee for medical service | Required guidelines Must be age 0–21 years or be totally disabled | Approx. 10,000 | 267 |

5. A) **Indicate organization(s) with major responsibility for obtaining subscribers (or enrollees):** CHANGE, INC. refers clients for same catchment area; Freedmen's Hospital refers patients from their clinics eligible here.

B) **Describe method(s) of marketing the medical care plan:** Local word of mouth; brochures and flyers; health educators; referral by persons able to predetermine eligibility–Freedmen's Hospital and Washington Hospital Center.

C) **List the advantages and/or disadvantages in present method(s) for obtaining subscribers:** Advantage–persons are already screened for eligibility; disadvantage–dissemination of information inconsistent and sometimes inaccurate.

6. **Please state specific objectives of the medical care plan.**

1. To improve the health status of the Upper Cardozo residents by providing quality comprehensive health care.

2. To narrow the existing gap in the health status of residents of the Cardozo area by making services more accessible geographically and economically.
3. To provide services for the prevention and treatment of disease in such a way and at such times as to respond to the consumer's needs for service.
4. To practice both therapeutic and preventive medicine focusing on the patient's general health rather than on his immediate illness.
5. To provide for improved social welfare of patients.
6. To attract and train residents from the community to perform jobs in the health service field offering placement in positions offering upward mobility.
7. To obtain the cooperation of other agencies to insure complete health services.

## Background Information for Conference

## March 30, 1970

1. **Name of Medical Care Plan:** Community Health Care Center Plan

   A) **Date Center opened:** Not Applicable (NA)

   B) **Date Center began providing limited services:** NA

   C) **Date Center began providing complete services:** NA

   D) **If Medical Center has not begun Medical Care Plan, please give approximate beginning date:** Mid-1971

   **Indicate whether full range of services (X) or limited number of services ( ) will be available at this time;**

   E) **Current date:** March 20, 1970 **and current number of subscribers:** NA

2. **Co-sponsoring institutions:** Yale University–New Haven Medical Center through an Affiliation Agreement

3. **Description of Corporate Structure and specify composition of Board and/or Administrative Unit:** Organized under "An Act Incorporating Community Health Care Center Plan, Inc.," Special Act No. 335 of the Connecticut Senate and House of Representatives in General Assembly.

4. **Please specify:**

   A) **Population(s) to be served:** 1) Current number NA. 2) Anticipated enrollment app. 30,000. 3) Characteristics by age and sex, of current enrollees NA.

| Sources of Funds | Proposed Type of Payment | Restrictions in Eligibility | Individuals Number Eligible | Individuals Number Currently Enrolled |
|---|---|---|---|---|
| Under study | Prepaid capitation<br>Temporary initial supplementary grant-in-aid | Dual choice<br>Ceiling on welfare participation to 20% of concurrent enrollment | 60,000-75,000<br>(Potential as of 3/30/70.) | NA |

5. **A) Indicate organization(s) with major responsibility for obtaining subscribers (or enrollees):** Community Health Care Center Plan

   **B) Describe method(s) of marketing the medical care plan:** Plan representative working with Health Education Committee of Greater New Haven Central Labor Council; possibly others

   **C) List the advantages and/or disadvantages in present method(s) for obtaining subscribers:** NA

6. **Please state specific objectives of the medical care plan:**

   The major objectives of the Plan are:

   1. **Service:** To provide comprehensive family health care through a group practice mechanism, emphasizing the importance of continuity and coordination of services in preservation of well-being, in prevention of ill health and in treatment of disease; to promote safeguards of high quality while seeking economies in the utilization of skilled manpower, inpatient facilities and specialty resources; to meet the fiscal needs through contractual prepayments and cost reimbursements; and to achieve satisfactions for both the population served and the providers of service.

   2. **Training:** To experiment on the design of group practice teams for effective utilization and training of personnel; to train next-generation physicians and nursing practitioners for effective participation in a group practice setting; and to train personnel for medical care administration, health education and community service.

3. **Research and evaluation:** To perform health services research through pre- and post-enrollment studies; to evaluate service and training objectives through ongoing studies; and, eventually, to undertake special administrative and clinical epidemiological studies.

## Background Information for Conference

## March 11, 1970

1. **Name of Medical Care Plan:** East Baltimore Medical Program (A Joint Venture of the East Baltimore Community Corporation and the Johns Hopkins *Medical Institutions)*

   A) **Date Center opened:** Not Applicable (NA)

   B) **Date Center began providing limited services:** NA

   C) **Date Center began providing complete services:** NA

   D) **If Medical Center has not begun Medical Care Plan, please give approximate beginning date:** Mid 1970

   **Indicate whether full range of services (X) or limited number of services ( ) will be available at this time.**

   E) **Current date:** March 11, 1970 **and current number of subscribers:** NA

2. **Co-sponsoring institutions:** Johns Hopkins Medical Institutions and the East Baltimore Community Corporation

3. **Description of Corporate Structure and specify composition of Board and/or Administrative Unit:** The EBCC consists of 25 members, 12 of whom are elected by enrollees in the health care program to represent them, 6 of whom are Model Cities Health Councils (Area A and B), 2 are members of the Johns Hopkins Medical Institutions staff, 5 are at-large members. This group makes all of the policies and handles the administrative direction of the operation. Under the terms of a joint working agreement with the Johns Hopkins Hospital which is the recipient of the service dollars an agreed upon program of services, budgets, and personnel practices will be administered by the East Baltimore Community Corporation.

4. **Please specify:**

A) **Population(s) to be served:** 1) Current number NA. 2) Anticipated enrollment 5,000. 3) Characteristics by age, and sex, of current enrollees Median age 14, 2/3 household headed by women, all residents of low income housing.

| Sources of Funds | Type of Payment | Restrictions in Eligibility | Individuals Number Eligible | Individuals Number Currently Enrolled |
|---|---|---|---|---|
| Mass. Blue Cross | Prepaid Capitation | Geographical and Groups only | 20,000 | 800 |
| 10 Insurance Cos. | | | 7,500 | 300 |
| Mass. D.P.W. | Capitation | Income and Residence | Not yet signed | |
| Medicare | Capitation | Age | 2,500 | |
| U.S.P.H.S. | Grant-in-Aid | Grant-in-Aid | | |

5. A) **Indicate organization(s) with major responsibility for obtaining subscribers (or enrollees):** East Baltimore Community Corporation

B) **Describe metnod(s) of marketing the medical care plan:** Individual enrollment by household

C) **List the advantages and/or disadvantages in present method(s) for obtaining subscribers:** NA

6. **Please state specific objectives of the medical care plan.**

This medical care plan is intended to provide us experience in rendering comprehensive health care for a defined population as a pilot effort toward establishment of a program for 25,000 people. In establishing these and other medical care plans, the Johns Hopkins Medical Institutions intends that they be used for demonstration purposes to providers and consumers alike, teaching areas, and programs in which improvements in the organization and delivery of health services can be developed. In this specific instance, we hope to be able to show that a higher quality of care is provided at lower cost through the mechanism of prepayment into a group practice.

## Background Information for Conference

## February 15, 1970

1. **Name of Medical Care Plan:** Harvard Community Health Plan

   A) **Date Center opened:** October 1, 1969

      1. **Number of subscribers:** 100

   B) **Date Center began providing limited services:** October 1, 1969

      1. **Number of subscribers:** 100

   C) **Date Center began providing complete services:** October 1, 1969

      1. **Number of subscribers:** 100

   D) **If Medical Center has not begun Medical Care Plan, please give approximate beginning date:** NA

   E) **Current date:** February 15, 1970 **and current number of subscribers:-** 1100

2. **Co-sponsoring institutions:** Harvard Medical School, Beth Israel Hospital, Boston Hospital for Women, Children's Hospital, Peter Bent Brigham Hospital

3. **Description of Corporate Structure and specify composition of Board and/or Administrative Unit:** Organized under Chapter 180 of Massachusetts Laws (General Statute for Charitable Trusts) **Board of Members:** 11 members–President, Fellows and Faculty Members of Harvard University, Harvard Medical School, Harvard Law School–guide and coordinate Plan activities. **Board of Directors:** 18 members–Faculty: Harvard Medical School, Harvard University, Harvard Law School; and Chiefs (and/or Directors): Beth Israel Hospital, Massachusetts General Hospital, Peter Bent Brigham Hospital; and Faculty: St. John's Seminary–Primary policy-making body. **Board of Advisors:** National Representatives (7 members) of

H.E.W., Blue Cross Association, and other major institutions and publications–Consultants to review and evaluate the Plan's development. **Administrative Unit** consists of Exec. Director, Assist. Director, Admin. and Clerical Staff, personnel who report through Exec. Director to Exec. Committee of Board of Directors. **Service Unit** consists of two Medical Directors, one responsible to Board of Beth Israel Hospital, one to Board of Peter Bent Brigham Hospital. Health Center Administrator responsible to Exec. Director of the Harvard Community Health Plan.

4. **Please specify:**

A) **Population(s) to be served:** 1) Current number 1,100. 2) Anticipated enrollment 30,000*. 3) Characteristics, by age and sex, of current enrollees (As of January 30, 1970) Total–754: Males–274, Females–480. Ages 0-5, 73; 6-21, 104; 22-44, 483; 45+, 94.

*80% enrolled through Blue Cross and Insurance Companies; 20% from low-income neighborhoods enrolled through Medicaid, Medicare, and grants.

| Sources of Funds | Type of Payment | Restrictions in Eligibility | Individuals Number Eligible | Individuals Number Currently Enrolled |
|---|---|---|---|---|
| Title XIX | Prepayment | Income level, illness | 3,500 | NA |
| Title XVIII | Prepayment | Age, etc. | 250 | NA |
| PHS, 314e | Grant | None | } 1,250 | NA |
| OEO | Grant | None | | |

5. A) **Indicate organization(s) with major responsibility for obtaining subscribers (or enrollees):** Harvard Community Health Plan

B) **Describe method(s) of marketing the medical care plan:** In-house sales force talking to employers about dual choice; explaining the Plan to employees; generalized literature geared to all segments of population; literature developed specifically for one particular group; "Open House" tours for potential subscribers; working with public relations staff on information for media, etc.

C) **List the advantages and/or disadvantages in present method(s) for obtaining subscribers:** We have not had substantial experience that would enable us to answer this question at this time.

**6. Please state specific objectives of the medical care plan.**

The purposes for which the corporation is formed are as follows:

The primary purpose of the corporation is to join with the Medical School of Harvard University and its affiliated teaching hospitals (hereinafter called the "Medical Institutions") to advance the development of comprehensive health care and to promote medical education by formulating a program or programs of prepaid comprehensive health services for a subscribing population which will:

(a) Attempt to create effective and economic means of organizing and delivering health care;

(b) Provide the students, faculties, and staffs of the Medical Institutions with an opportunity for studying and teaching comprehensive health care; and

(c) Conduct social and clinical research concerning health needs and the effectiveness of health care.

## Background Information for Conference

### March 3, 1970

1. **Name of Medical Care Plan:** The Medical Care Group of Washington University (MCG)

    A) **Date Center opened:** November 20, 1969

    1. **Number of subscribers:** 300 families to date

    B) **Date Center began providing limited services:** Complete services provided from starting date

    1. **Number of subscribers:** 100 families

    C) **Date Center began providing complete services:** November 20, 1969

    1. **Number of subscribers:** 100 families

    D) **If Medical Center has not begun Medical Care Plan, please give approximate beginning date:** NA

    E) **Current date:** March 3, 1970 **and current number of subscribers:** 300 families

2. **Co-sponsoring institutions:** Washington University School of Medicine and the Metropolitan Life Insurance Company

3. **Description of Corporate Structure and specify composition of Board and/or Administrative Unit:** MCG is operated by the staff of the Division of Health Care Research with G. T. Perkoff acting as Medical Director, as well as Director of the Division. An advisory board for MCG was appointed by the Dean of the Medical School, Dr. M. Kenton King, consisting of a representative from each clinical department and one each from Barnes and St. Louis Children's Hospitals. There are no consumers on the Board. The board advises on policy and research design, and each member acts as the coordinator of whatever clinical care is provided MCG patients by his own department.

4. **Please specify:**

A) **Population(s) to be served**: 1) Current number 300 families. 2) Anticipated enrollment 500 families. 3) Characteristics, by age and sex, of current enrollees Adult males–135; adult females–131; dependents–302 (these data for 1st and 2nd enrollments only, data not available for enrollment #3). Only 3 patients from 1905-08. No Medicare enrollees have yet received services in MCG.

| Sources of Funds | Type of Payment | Restrictions in Eligibility | Individuals Number Eligible | Individuals Number Currently Enrolled |
|---|---|---|---|---|
| Metropolitan Life Ins. Company | Prepayment for ambulatory services by special insurance, plus research grant | Must be employed in Co. with some basic Met. Group Health Ins., must have basic hospital plan, families selected by lot at each enrollment in prearranged #, remainder applying serve as controls. | 500 families | 300 families |

5. A) **Indicate organization(s) with major responsibility for obtaining subscribers (or enrollees):** Metropolitan Life Insurance Co.

B) **Describe method(s) of marketing the medical care plan:** Individual contracts in participating companies: (1) St. Louis District Offices, Met. Life Ins. Co.; (2) General Motors–UAW, St. Louis; (3) Monsanto Chemical Co. In the case of (1), sales representatives met with district managers, plan was offered after general meeting. In the case of (2), local UAW chapter chairmen had prerogative for offering plan, did so diffidently by bulletin board notice. In the case of (3), method was same as for (1), working through head, employee benefits section and district personnel officers.

C) **List the advantages and/or disadvantages in present method(s) for obtaining subscribers:** (1) and (3) work very well. Method (2) only partially successful because plan was not sold; benefits were not explained well; plan was added as another option to several existing ones.

**6. Please state specific objectives of the medical care plan.**

1. To develop a system of family oriented group practice within a specialty oriented medical center which will use but not duplicate special skills in that center.

2. To compare in study and control patients, who have the same hospital insurance, the effect on hospital use, health level, and patient acceptability of an experimental ambulatory care health insurance when payments are based on a fee schedule, but are prepaid according to actuarial estimates of use.

3. To provide a pilot program which will give data about use and cost which will be clear enough to:

    a. indicate what measure of savings would have to accrue to the group from decreased hospital use for such an effort to be on sound fiscal grounds if enlarged.

    b. show whether growth outside the center would be feasible.

    c. provide a basis for a plan to care for indigent patients whose medical care could be paid for by public or private third parties.

    d. begin a practice which might become a base for teaching comprehensive health care.

    e. provide the nucleus around which faculty interested in health care research could be assembled.

## Background Information for Conference

## February 25, 1970

1. **Name of Medical Care Plan:** ULCA Community Health Care Prepayment Plan

   A) **Date Center opened:** Not Applicable (NA)

   B) **Date Center began providing limited services:** NA

   C) **Date Center began providing complete services:** NA

   D) **If Medical Center has not begun Medical Care Plan, please give approximate beginning date:** November 1, 1970

   **Indicate whether full range of services ( X ) or limited number of services (   ) will be available at this time.**

   E) **Current date:** February 25, 1970 **and current number of subscribers:** None

2. **Co-sponsoring institutions:** UCLA Hospital and Clinics, UCLA School of Medicine

3. **Description of Corporate Structure and specify composition of Board and/or Administrative Unit:** The Regents of the University of California operate the UCLA Hospital which will contract to provide services.

4. **Please specify:**

   A) **Population(s) to be served:** 1) Current number NA. 2) Anticipated enrollment 36,000. 3) Characteristics, by age and sex, of current enrollees (anticipated) 0-16, 12,446; 16-23, 4,800; 23+, 18,736. 50% male, middle class, employed family head, group enrollment.

| Sources of Funds | Type of Payment | Restrictions in Eligibility | Individuals Number Eligible | Individuals Number Currently Enrolled |
|---|---|---|---|---|
| 100% Blue Cross-Blue Shield | Prepayment on enrollment unit basis | Group enrollment through employment | NA | NA |

5. **A) Indicate organization(s) with major responsibility for obtaining subscribers (or enrollees):** Blue Cross–Blue Shield

   **B) Describe method(s) of marketing the medical care plan:** Plan will be marketed as a new Blue Cross or Blue Shield alternative model to traditional fee-for-service.

   **C) List the advantages and/or disadvantages in present method(s) for obtaining subscribers:** Hypothetical advantage in identification as a Blue Cross Plan or Blue Shield Plan.

6. **Please state specific objectives of the medical care plan.**

   1. To influence favorably (reduce) incidence and severity of health impairment (aggregate) in the population (insofar as it is technically possible and economically feasible).

   2. To demonstrate a model of financial and contractual relationships between consumers and providers of health services, between consumers and a health insurance enrollment intermediary, and between that intermediary and providers of health care which will provide incentive and evaluative stimuli supportive of goal 1 above.

   3. To provide a laboratory within which alternative patterns of health service organization can be tested for their outcomes.

   4. To provide a model for the exploration of service commitments associated with the teaching of physicians and training of specialists in the health sciences.

# ISSUES AND PROBLEMS RELATING TO THE ORGANIZATION AND FINANCING OF THE COMMUNITY HEALTH CARE CENTER PLAN

G. K. MacLeod, M.D.

At the outset, it is important to make clear the distinction between the organizational sponsorship of the New Haven Plan and that of the other programs being described here today. The Community Health Care Center Plan (CHCCP) is not university sponsored; rather it is the plan of a nonprofit community corporation authorized under a special act of the 1967 Connecticut legislature. CHCCP is formally affiliated with the Yale-New Haven Medical Center which appoints two members to the plan's 36-member Board of Directors. Both the plan and the Center share the basic objectives of service, training and research. It is important to point out that the plan, in contrast to the Medical Center, intends to put service ahead of training and research in any ranking of these three functions.

- With regard to service, the central focus of the plan will be to provide prepaid comprehensive family health care, through a group practice mechanism, emphasizing the importance of continuity, comprehensiveness and coordination of services. The design of the service program also includes the decision to seek economies in the utilization of skilled manpower, and to control utilization of inpatient facilities through appropriate use of ambulatory diagnostic and treatment resources.

- With regard to training, we hope to experiment with new methods for the training of next-generation physicians and nursing practitioners for effective participation in a group practice setting; and we also hope to provide a suitable training ground or residency in medical care administration, health education and community service.

- The research objective is designed to measure and evaluate the performance of both the service and training programs. Because this conference was convened primarily to discuss research and evaluation, this important objective is discussed separately in the paper entitled, "Preliminary Evaluation Plans and Methods of the Community Health Care Center Plan in New Haven, Connecticut."

In these remarks, I intend not to avoid the controversies and difficulties surrounding the organization of a comprehensive health care plan but, using the language of the day, to tell it like it is.

## SERVICE ISSUES

The issues underlying the need for a new approach to delivering services in New Haven are not much different from those in the rest of the country although, in this community, there have been previous attempts by consumer groups to promote organized health care programs. It comes as no surprise that these early efforts in New Haven took place after World War II and paralleled the era of growing specialization and rising costs of health care. Efforts of the late 1940's and the 50's did not even reach the stage of being stillborn. During the past five to ten years, a further attempt to develop a prepaid group practice plan showed more promise. It now looks like the labor of the past decade, after an unusually long gestation, may soon produce a viable delivery system.

There is in New Haven, as elsewhere, a public awareness of the increasing effectiveness of medical care, and a growing concern for its lack of ready availability and its increasing costliness. This awareness has been translated into an important new social issue, commonly referred to as the right to medical care. And this right is supported by large amounts of money which are being poured into our medical care non-system from both private and public sources. Furthermore, the inefficiency and inadequacy of coverage under existing private insurance arrangements are so costly that most people—even with insurance—cannot reliably foresee what their medical expenses will be and thus are unable to budget against them.

For the past 20 years, in New Haven, it has become increasingly difficult to obtain comprehensive health or medical care as a result of the growing shortage of primary physicians without replacement through an organized system of care. This shortcoming is manifested by the growing demand for emergency room services, convenience clinics and other types of improvised medical care at all hours of the day and night. Moreover, as governmental research funds were pumped into the University, the staff and facilities of the Yale-New Haven Medical Center grew by leaps and bounds while the delivery of medical care did not improve and probably deteriorated.

It is generally expected that a university medical center of such imposing stature as Yale should be able to deliver high quality comprehensive family health care to at least part of the community and not just provide health care primarily to meet its own need for clinical material to service its teaching and research programs. It seems fair to say that the limited delivery of comprehensive health services which is performed by the Medical Center beyond its own needs is done only in response to unavoidable pressures from the New Haven community. Even when a pilot program for family health care was devised at Yale for a small group of medically indigent families, patient care was fragmented and limited to one socioeconomic group.

## TRAINING ISSUES

The absence of a training program at Yale which would prepare health professionals to provide comprehensive health care relates directly to the Medical Center's lack of commitment to assume responsibility for delivering comprehensive family health care to more than just a few families.

Needless to say, fragmentation of care results from this policy. Such fragmentation results when no one primary physician or health care team assumes responsibility for continuing health maintenance and for patient care during episodes of sickness or disability. And it results when no primary physician coordinates all of the services rendered by consultants, subspecialists and ancillary health personnel.

Under the existing system of medical education at most university medical centers, it is deemed sufficient to have young physicians learn the practice of medicine by concentrating their training mainly on the hospital care of the seriously ill "service" or "ward" patients. This situation is highlighted *within* the Yale-New Haven Medical Center where there is not a single full-time primary physician among the *full-time* faculty of close to 500 specialists. Thus, there is a serious deficiency in the curriculum with respect to teaching the practice of delivering continuous and comprehensive medical care.

As a result of deficiencies and limitations in training programs, trainees have no choice other than to provide fragmented patient care which has often led to serious omissions or duplications of important diagnostic and therapeutic procedures. In addition, long waits in the emergency room and clinics and the lack of amenities have contributed to an outcry against the system.

## SERVICE PROBLEMS

Most of our problems relating to organizing the service component of CHCCP could be resolved by money although this has not always been the case. I should like to recount some of the probelms we faced during our early planning period and which have now been resolved.

During the early phase of design of this project, It became readily apparent that there were legal constraints against anyone other than physicians and medical schools arranging for the availability of medical services in

Connecticut. To meet the objective of comprehensive family health care, it would have been necessary for a professional group to set up several corporations to provide the constituent parts of a comprehensive health plan such as we are now designing. Because of the likelihood of opposition to this activity and the possibility of ensuing litigation if this action was undertaken by a community group, we decided to seek broad enabling legislation to permit a nonprofit community corporation to set up a program for providing comprehensive family health care.

With support from the labor movement, the State Health Commissioner, the State Welfare Commissioner, the Connecticut Hospital Association, the Yale Law School senior faculty, many physicians and other professionals, the legislation was enacted and signed into law–but only after a hard fought battle against some of the more conservative elements in organized medicine, dentistry, pharmacy and optometry. It is worth mentioning that we were not opposed in this undertaking by the Connecticut Blue Cross and Blue Shield Plans or by the insurance industry.

The next problem was to achieve a formal affiliation between our newly chartered corporation and the Yale-New Haven Medical Center. This entailed debate, discussion and decision-making in committee meetings, staff meetings and councils of the Medical Center, and again was brought to a successful conclusion.

One of the continuing problems with respect to organizing the service component is the difficulty which some laymen have in recognizing the very great importance of clinical and professional autonomy in patient care and in the organization of the professional staff. This lack of awareness may slow the trend toward consumer involvement in making arrangements for medical care delivery. During the present period of prerecruitment at CHCCP, some interested physicians have expressed concern about their degree of control over the clinical and professional aspects of the program as well as its productivity and quality of care.

## TRAINING PROBLEMS

The traditional leadership of the medical education system–in many medical centers, but not in all–appears to be opposed or reluctant to accept responsibility for the training of primary physicians to deliver comprehensive family health care. Efforts to establish such training programs have met with a lack of support from the departmental chairmen and their faculties who should be responsible for providing this very important training experience. Their objections follow these general lines:

- The demand for primary medical care should be met by nonphysicians. The highly trained specialist of today is bored by taking care of problems beneath his level of competence and he needs to continue to use and develop his technical skills in order to lead a full professional life.

- Another argument says that an affiliated program, such as CHCCP, is not appropriate for training physicians in delivering care. The medical center, with its faculty and staff fully committed to training and research, is the only suitable environment for physicians-in-training.
- The debate continues with the fairly honest statement that training primary physicians is not the purpose of the university medical center. In the center, physicians are trained to work in academic medicine, to do research or to practice subspecialty medicine.
- A final argument is that comprehensive medical care is already provided in most university medical centers. Even though it may be fragmented and limited to one socioeconomic class, the essential elements of comprehensive care can be learned from this experience.

Hopefully, many forces, both local and national, will support activities to dissuade the faculties from their traditional position, and the chairmen will follow the leadership of some deans who have been favorably disposed to designing training programs in comprehensive family health care.

A second problem relating to organizing the training program is the allocation of staff, space and time for training in a new facility. Since this kind of training has not been provided heretofore, we have been obliged to estimate how much additional square footage will be needed for residents to train or for medical students to assist health personnel. We anticipate, of course, that additional personnel will be required to back up trainees providing health care. And of great importance is the allocation of time of staff physicians working as preceptors for residents and others in training.

## FINANCING

We come full circle to the omnipresent need for the wherewithal to finance the program objectives. Though CHCCP was fortunate to be awarded federal support for the early years of service and research, our efforts with respect to financing the training objective have not been successful to date.

The cost of training residents would be partially defrayed by their services. To this extent, the burden of costs should be assumed as part of prepayment. For that portion of residency training which benefits the general community or the nation, the cost should not be assumed by the enrollees in the plan but by funds collected for that purpose from private or governmental sources. Similarly, the portion of the research program which relates to the day-to-day administration and operation of the program should be charged to CHCCP. However, the cost of research activities of a general nature should not be passed on to the enrollees.

A special problem resulting from the use of a university teaching hospital by an affiliated group practice plan is the high per diem cost of an expensive educational institution. And this will dictate the need for primary physician control over impatient utilization.

## Excerpts from ISSUES AND PROBLEMS OF MARKETING

### Experience of the Columbia Medical Plan

### as presented to Group Health Institute
### Honolulu, Hawaii
### May 26, 1970

### William F. Towle

Several principles were adopted in the planning process relative to marketing. They constituted the decisions on which marketing was to be undertaken and are valid with respect to the course of action delineated for the program.

- The Columbia Medical is intended to be available to all residents of Columbia City and the surrounding area on a voluntary, dual-choice basis regardless of existing employer-provided or other health insurance. Based on this, an Enrollment/Service Area was defined within which total services under the contract could be assured. Enrollment outside the Area was to be restricted as much as possible.
- We concluded after extensive investigation that multiple carrier participation in marketing would produce enrollment more rapidly than a single carrier participation or the creation of a new carrier mechanism. The adoption of this principle was readily agreed to by Connecticut General, and by the other carriers with whom we are currently discussing participation. As other plans have also concluded, we saw a major advantage in capitalizing on the market held by the private health insurance industry.
- Based on recognition that a large majority of potential plan members already had employer-provided indemnity insurance, it was necessary to develop, in the initial stages of the plan, special group and supplemental packages for marketing by participating carriers through routes differing from usual employer and union contracts. We were cognizant that as employment-centered sales increased by multiple carriers, such supplemental packages might diminish.
- Services from the plan physicians would be made available primarily to members, with fee-for-service care restricted to emergency and urgent situations. It was thought that such limitation would improve

adoption of the plan by employment-centered groups and assure priority of care to members.

Based on these principles, experience in enrollment penetration by other prepayment plans, and the fact that the Columbia area has no hospital and only limited medical resources, we projected enrollment of several hundred at the inception of the plan, 8,000-10,000 by July 1970, 15,000 by July 1971, and gradual increase to 70,000-100,000 by 1980. Our actual enrollment experience to date, however, falls short of these projections. And it does so for a variety of reasons, the main reason being that of the complexity of marketing itself.

To illustrate, permit me to indicate where enrollment currently stands, what factors we–and here I reflect opinions both of the carriers and ourselves–recognize as contributing positively and negatively to current enrollment, and, finally attempt some possible solutions.

## Current Enrollment

Current enrollment in the Columbia Plan is about 3600 individuals from 1200 families. Seventy (70%) percent reside in Columbia; 30% outside. Thirty-five (35%) percent of the Columbia residents have enrolled; 65% continue enrollment in indemnity plans and presumably obtain medical care elsewhere. Of the 3600 enrolled, 40% have done so through a special group plan approved by the State Insurance Commissioner that established residents of Columbia as a group; the remaining 60% (or about 2200 members) are enrolled through employer group cases that Connecticut General has insured for health and other benefits. Penetration within the present employer groups ranges from under 5% in one group to 90% in another.

Our expected enrollment to date is being scheduled for three reasons:

1. General lack of understanding of the plan, perhaps even its presence, by the consumer in the Service Area. Episodic illness and use of medical resources in such instances is highly ingrained in consumer habits. Others depend totally on their employer providing medical insurance without further thought.

2. Saturation by the one participating carrier of employer cases available to him at this stage of development.

3. Failure until just recently to achieve approval for federal employee enrollment. The effective date has yet to be established, but it is expected that this will be established shortly. As those in the Civil Service Commission with whom we are in contact know, our present enrollment projections include a substantial number of federal employees and their dependents. According to

estimates, 20-25% of the population in our Service/Enrollment Area are federal employees and families.

And, on the plus side, let me also point out that current enrollment is about 30% higher than it would be without the development of the supplemental package available, at this point, only to Columbia residents. I mentioned earlier the approval of a group plan based on residence in the new city, which accounts for 40% of enrollment, or about 1300 individuals. The bulk of these are enrolled in a supplemental plan by which the head of household is able to retain his employer-provided indemnity plan and purchase an add-on package at a reduced premium. Such an arrangement makes him a full member and the provider files claims under the indemnity plan for services it might cover. Reimbursement via this mechanism is credited against capitation payments from the carrier.

In theory, the supplemental plan works well and does provide a going-in mechanism whereby members retain employer contributions and are not penalized by joining the prepayment plan. However, the mechanism is administratively complicated. As employer cases increase, its use and importance will diminish except perhaps in cases of high and low options offered by a carrier to a single group.

## Complicating Factors

Let me now turn to some of the factors that further complicate marketing of group practice. Again, these factors are taken from our experience; however, I believe they are common to other situations as well:

1. Multiplicity of Employers: A survey of employment uncovered approximately 165 different employers of persons residing in the Service/Enrollment Area. These employers range from corporate giants such as Westinghouse and General Electric, Federal, state, and local governments, to many businesses with less than 10 employees. Mechanisms for selling and underwriting for groups of all sizes must be found.
2. Multiplicity of Carriers: The large number of insurers offering medical insurance, much of it tied to other pieces of the welfare package, likewise complicates the picture. A dual-choice package from a single carrier may operate as effectively as two competing carriers, one offering indemnity and the other prepayment. Such efforts will be ineffective, however, without incentive to the insurance agents and brokers promoting this dual package.
3. Lack of Dual Choice: The lack of the dual choice in non-union and some union organizations likewise inhibits prepayment. A major effort extending the dual choice concept into the entire employer and union group and non-group sectors is essential. Frankly, in my opinion, development of

dual choice under Medicare Pact C and Medicaid are more simple tasks than convincing management of its merits.

4. National Insurance Policies: Large corporations, business, and some unions are, in many cases, found to have national contracts negotiated from headquarters. In such instances, geographically limited group practice plans suffer since headquarters would prefer not to be bothered with administratively complicating local plans. The recently negotiated "group practice plan" option in the General Electric-IUE contract is an example of positive action toward local option.

5. Prevalence of Employment-Centered Medical Insurance: Finally, the prevalence of medical insurance based on place of employment creates difficulty in fostering special groups offered through such mechanism as residence area, combination of small groups into groups sufficiently large to achieve group advantages, and the like. I am not advocating reducing employer contributions, only in finding new mechanisms other than employment-centered insurance as a solution to group practice plan marketing.

## Solutions

And, finally, possible solutions. There are no pat solutions to a very complex situation. The variations are many and the details to implement the solutions perhaps as complex as the solutions themselves. Here are a few suggestions:

1. Involvement of private health insurance is mandatory if prepayment is to be extended. The efforts and successes of present prepayment plans are clear; however, inclusion of carriers who currently have access to a vast market are required to expose the potential market in quantum numbers.

2. Agents and brokers offering clients the dual-choice option must be educated with respect to the relative advantages and disadvantages of indemnity and group practice, market that which is most appropriate and, if necessary—and it may be—be provided an incentive for converting a group from indemnity to dual-choice.

3. The group practice plan itself has an obligation in marketing. The carrier cannot be expected to offer competing products. To overcome this, providers must work in tandem with the insurance agent or broker, with management and union, and, most importantly, with the consumer directly.

4. Corporate national insurance contracts must be liberalized to permit local option and approval of dual-choice programs where appropriate.

5. Special group plans with Medicare and Medicaid are being detailed. These must be completed rapidly as a means of alleviating these serious national social needs. However, essential to all programs is the need for

reciprocal arrangements between group practice plans or indemnity insurance to cover out-of-area emergencies, claims processing, and other factors, unless the group practice is willing and legally able to assume such a risk. Other special group plans for small groups and individuals, based on residence, must also be developed.

## Conclusion

I have attempted in a few minutes to describe a most complex marketing situation by presenting the picture as we see it from a particular vantage point. New prepayment plans just getting started and on the architect's table are, or will soon be, caught in the complicated web well-known to the established plans. Concerted effort by all engaged in these programs is essential to successful expansion of prepayment plans.

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